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# Contextual Barriers and Motivators to Adult Male Medical Circumcision in Rakai, Uganda

Qualitative Health Research
23(6) 795–804

DOI: 10.1177/1049732313482189
qhr.sagepub.com
SAGE

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**Abstract**

Medical male circumcision (MMC) is a central component of HIV prevention. In this study we examined barriers to and facilitators of MMC in Rakai, Uganda. Interviews and focus groups with MMC acceptors, decliners, and community members were collected and analyzed iteratively. Themes were developed based on immersion, repeated reading, sorting, and coding of data using grounded theory. Pain, medical complications, infertility, lack of empirical efficacy, waiting time before resumption of sex, and religion were identified as obstacles to MMC acceptance. Prevention and healing of sexually transmitted infections (STIs), access to HIV and other ancillary care, penile hygiene, and peer influence were key motivators. Voluntary counseling and testing for HIV, partner influence, and sexual potency were both barriers and motivators. Individual and societal factors, such as pain and religion, might slow MMC scale up. Health benefits, such as HIV/STI prevention and penile hygiene, are essential in motivating men to accept MMC.

**Keywords**

Africa, sub-Saharan; focus groups; HIV/AIDS prevention; interviews, semistructured; research, qualitative

Male circumcision is one of the oldest surgical procedures performed for a variety of reasons, including religion, as a medical procedure, or as part of a traditional ritual for initiation of young men into manhood (Malone & Steinbrecher, 2007). Male circumcision refers to the surgical removal of some or all the foreskin of the penis, or prepuce. When performed by a well-trained health professional in a properly equipped setting, the procedure is referred to as "safe" or "medical" male circumcision (MMC).

MMC has become central in the HIV-prevention discourse in heterosexual generalized epidemics. This follows findings from three randomized controlled trials (RCTs) of MMC for HIV prevention conducted in South Africa (Auvert et al., 2005), Kenya (Bailey et al., 2007), and Uganda (Gray et al., 2007). These RCTs showed a 50% to 60% efficacy against HIV acquisition among HIV-negative men. The efficacy of MMC might be partly explained by the potential role played by the foreskin in HIV acquisition (Prodger et al., 2011).

In 2007, the World Health Organization (WHO) and the Joint United Nations Program on HIV/AIDS (UNAIDS) recommended MMC as an additional HIV prevention strategy in countries with high HIV prevalence (WHO & UNAIDS, 2007). Following this recommendation, some national governments in sub-Saharan Africa developed policies (Ministry of Health, Uganda, 2010; National AIDS/STD Control Program, Ministry of Health, Republic of Kenya, 2008) and programs to scale up MMC for HIV prevention (Wakabi, 2010). To ensure successful implementation of these programs, understanding the contextual factors that might deter or motivate men's uptake of MMC is critical for effective MMC promotion messaging and appropriate counseling.

Researchers who have conducted acceptability studies have previously described some barriers and motivators to MMC, including pain and STI prevention, respectively (Lukobo & Bailey, 2007). In this article we present

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**Table 1.** Participant Categories by Data Collection Method, HIV Status, and Circumcision Status.

| Participant Category | Data Collection Method | HIV Status | Circumcision Status |
|---|---|---|---|
| **Acceptors** | Focus groups, Gates[a] (*n* = 5) | Positives plus HTC[c] results decliners at trial randomization | Circumcised (intervention) and uncircumcised (control) trial participants (combined) |
| | Focus groups, NIH[b] (*n* = 6) | Negatives at trial randomization and accepted result receipt | Circumcised (intervention) and uncircumcised (control) trial participants combined |
| | Interviews, Gates (*n* = 8) | Positives plus HTC results decliners at trial randomization | Circumcised (intervention) trial participants |
| | Interviews, Gates (*n* = 8) | Positives plus HTC results decliners at trial randomization | Uncircumcised (control) trial participants |
| | Interviews, NIH (*n* = 9) | Negatives at trial randomization and accepted result receipt | Circumcised (intervention) trial participants |
| | Interviews, NIH (*n* = 8) | Negatives at trial randomization and accepted results receipt | Uncircumcised (control) trial participants |
| **Decliners** | Focus groups (*n* = 6) | Unknown | Uncircumcised |
| **Community members** | Focus groups (n = 6) | Unknown | Unknown |

[a]Gates Foundation
[b]National Institutes of Health
[c]HIV testing and counseling

qualitative research conducted as part of two RCTs that investigated the impact of MMC on HIV prevention in Rakai, Uganda. The first RCT enrolled 4,996 HIV-negative men who accepted HIV testing and counseling (HTC) and receipt of their serostatus results (Gray et al., 2007). The second RCT enrolled 922 uncircumcised HIV-positive men and HIV-negative men who declined receipt of their serostatus results (Wawer et al., 2009). The aim of the qualitative study we describe here was to examine barriers and motivators to MMC in this setting. We conducted this research prior to the WHO and UNAIDS recognition of MMC as an HIV prevention strategy. Our findings thus represent perceptions of MMC based on prevailing local knowledge at the time of the trials.

## Methods

This study was conducted by the Rakai Health Sciences Program (RHSP) in the rural district of Rakai, located in southwestern Uganda. Prior to the two RCTs, the prevalence of male circumcision in the Rakai Community Cohort Study was approximately 16.5%, and circumcision was practiced almost exclusively among Muslims (Gray et al., 2000).

### *Participants*

Between 2004 and 2006 we conducted 33 individual interviews and 23 focus groups (11 groups with acceptors, 6 with decliners, and 6 with community members who had not been approached for MMC). MMC acceptors were men who enrolled in the MMC trials and adhered to the randomization and other trial procedures. Decliners were men who enrolled in the study, received the initial health education, gave consent and underwent a physical examination, but did not return within 6 months for follow-up components of trial participation and ultimately, after three to five contact attempts by trial personnel, declined to participate. Table 1 shows the distribution of data by participant category and data collection method.

### *Recruitment*

We generated lists of potential interview and focus group participants from the trial databases. We created separate lists of acceptors, decliners, and community members and subcategorized them by community type (rural, semiurban, and urban) and age (15 to 19, 20 to 35, and 36 to 49 years). All participants were screened for eligibility, willingness to participate, general knowledge about topics relevant to MMC in the community, willingness to devote time to the interview or focus group, knowledge about local social norms, and willingness to provide written informed consent.

### *Interview Guides and Data Collection*

Semistructured interview guides were developed in English and translated into Luganda, the predominant language in Rakai. Makerere University's Institute of

**Table 2.** Key Domains, Target Groups, and Illustrative Questions for Interviews and Focus Groups.

| Domains | Target Groups | Illustrative Questions |
|---|---|---|
| **Barriers** | Focus groups, decliners | Tell me about the reasons that hinder you or other men in your community from participation in the male medical circumcision study. |
| | Focus groups, acceptors | Tell me about the reasons that hinder men in your community from participation in the male medical circumcision trial. |
| | Focus groups, community members | Based on your experience living in this community, what are some of the factors hindering men from accepting to join the male medical circumcision trial? (Probe for personal experiences.) |
| | Interviews, acceptors | |
| **Motivators** | Focus groups, decliners | Tell me about the reasons that motivate men in your community to join the male medical circumcision study. |
| | Focus groups, acceptors | Tell me about the reasons that motivated you or other men in your community to participate in the male medical circumcision study. |
| | Focus groups, community members | Based on your experience living in this community, what are some of the factors that motivate men to accept to join the male medical circumcision trial? (Probe for any stories they would like to share.) |
| | Interviews, acceptors | What factors motivated you to join the male medical circumcision trial? (Probe for motivation of other men.) |

Languages reviewed, back-translated, and certified all instruments. We followed an iterative approach to data collection, which allowed the qualitative research team to refine and redefine the guides' questions around barriers to and facilitators of MMC in this setting. During interviews and focus groups, participants were asked to describe factors that influenced them and/or other men to accept or decline MMC trial participation; illustrative questions are presented in Table 2. Interviews were conducted at participants' homes or at convenient locations proposed by participants. Focus groups were conducted at a central private venue in the community. Interviews and focus groups lasted an average of 65 and 75 minutes, respectively.

## Analysis

Data analysis was also conducted iteratively to identify emerging themes. Preliminary findings served to inform the trials' development of health-promotion messages and to shape new waves of data collection. Our study team held monthly progress review meetings to discuss emerging qualitative themes. The analytic process was based on immersion in the data and repeated reading, sorting, and coding following Glaser and Strauss's grounded theory (Glaser & Strauss, 1967). We used Creswell's "lean coding" approach, in which a shortlist of five to six tentative codes was developed, then categories were expanded through rereading and open coding until saturation was reached (Bowen, 2008; Creswell, 2007). These categories became our final codes. Transcribed data were imported into Atlas.ti (Muhr, 2004). to facilitate the application of codes and development of data summaries. We used the language of participants to guide development of code labels, which were identified with short descriptors in the form of in vivo codes.

## Subanalysis

Seventeen interviews with MMC acceptors and six focus groups with decliners were coded and analyzed separately to identify themes that were unique to either of the categories. The findings from these subanalyses were compared with each other and with the overall analysis using matrices. We rated the frequency with which each barrier or motivator was mentioned on a categorical scale from 1 to 4, with 4 representing *very frequently mentioned*, 3 *frequently mentioned*, 2 *occasionally mentioned*, and 1 *rarely mentioned*. Frequencies were not used in the strict sense of counts but as general markers of the participants' levels of interest in a specific category, both within and across interviews. Findings are reported as barriers, motivators, and overlapping factors. We conducted six independent ratings, one for motivators and one for barriers across three tiers (acceptors, decliners, and overall).

## Ethics

Institutional Review Board (IRB) approval for this study was obtained from the Johns Hopkins Bloomberg School of Public Health, the Western IRB, the Uganda Virus Research Institute's Science and Ethics Committee, and the Uganda National Council for Science and Technology. RHSP's Community Advisory Board (CAB) and the Rakai District Directorate of Health provided oversight to the research. Each study participant provided written

**Table 3.** Ratings of Barriers and Motivators by Male Medical Circumcision Acceptors and Decliners.

| Interview Type | Barriers to MMC[a] | Motivators for MMC |
|---|---|---|
| **17 Interviews with MMC acceptors** | Partner influence (4)<br>Loss of sexual potency (4)<br>Fear of pain (4)<br>Render infertile (3)<br>Fear of HIV results/HTC[b] (3)<br>Ridicule (3)<br>Religion (2)<br>Time too long to return to work (2) | STI[c] prevention (4)<br>Personal hygiene (4)<br>Peer Influence (4)<br>HTC (4)<br>Financial incentive (3)<br>Other medical care (3)<br>Healing of STIs (3)<br>Gain sexual potency (3)<br>Partner influence (2)<br>Ridicule (2) |
| **6 Focus groups with MMC decliners** | Partner influence (4)<br>Fear of pain (4)<br>HTC (4)<br>Medical complications (4)<br>Lack of empirical efficacy (3)<br>Religion (3)<br>Loss of sexual potency (3)<br>Time too long to wait (work: 2)<br>Time too long to wait (sex: 2) | STI prevention (4)<br>Personal hygiene (4)<br>Financial influence (3)<br>Access to free medical care (3)<br>HTC access (3)<br>Contribute to research (2) |

[a]Male medical circumcision
[b]HIV testing and counseling
[c]Sexually transmitted infection

informed consent. After each focus group and interview, we provided information on MMC and other health topics to participants. All names used in this article are pseudonyms.

## Results

The median age was 30 years for focus group participants and 29 years for interview participants. The median age for focus group participants by categories was 30 years for acceptors, 26 years for decliners, and 28 years for community members. All participants in this study were men. Below, we present barriers to MMC, motivators to MMC, and factors that acted as both barriers and motivators. Table 3 summarizes these themes along with their frequency ratings from the subanalysis.

### *Barriers to MMC*

*Fear of pain.* Fear of pain was a main barrier to MMC. The perception that surgical procedures in adults lead to severe pain was mentioned frequently in all focus groups with decliners, in almost half of focus groups with acceptors, and in more than half of interviews. Participants' discussions about the pain associated with MMC were often accompanied by illustrations of scissors and/or incisions and, in some instances, expressions depicting severe pain, as stated by some focus group participants: "Another factor is that of pain, for me pain [nods head side to side]." "It is the kind of pain which is associated with getting an *akagiritta* [razorblade cut] or a pair of scissors. [All laugh] Yes, *akasso* [the knife]! It is about pain, much as I am interested. Eh, that pain!" According to some focus groups, participants' understanding of circumcision was informed by their local understanding of historical circumcision, mainly among Muslims:

> Participant (P): They might think that they circumcise directly like the Muslims were doing previously.
> Moderator (M): If they circumcise like Muslims, what prevents him from going for the procedure?
> P: The pain. Before this technology was introduced, they [Muslims] would just cut without *kusanyalaza* [anesthesia].

*Fear of possible medical complications.* Fear of medical complications was mostly raised by decliners, on fewer occasions by community members, and never among acceptors. The most salient medical complication participants expressed concern about was sepsis: "To be cut? An old person to be cut, if I become septic, what do you do?" Other participants feared that circumcision would cause diseases, swelling, and deformities of the penis, as revealed in a focus group: "The penis can develop diseases and swelling as a result of circumcision. I cannot

take it up." In addition, participants were concerned that if they had other ailments they were not aware of, undergoing surgery might worsen or cause their health to deteriorate. On probing for further details about those ailments, a participant described them as *endwadde z'ekisajja* (male diseases):

> There are several male diseases which might worsen once one is circumcised, and unfortunately many of us do not know whether we have them or not. This might make one get bedridden and fail to work, resulting into other sicknesses not acquired before to develop. All caused because one accepted to be circumcised.

*Concerns about the possibility of male infertility.* Some participants were concerned that circumcision might reduce fertility. Whereas decliners never mentioned this as one of their fears, there were strong perceptions among acceptors that men in their communities declined for fear that the procedure might lead to infertility. An interview participant stated, "Other people say that in the process of circumcision *bakutta akasolo* [they destroy the penis]. They want Uganda to stop producing children. The man's sexual manhood reduces, meaning you cannot get a woman pregnant."

*Lack of empirical efficacy of MMC for HIV prevention.* In many of the focus groups, especially with decliners and occasionally among acceptors, at least 1 or 2 participants wondered why a research study was needed, given that they (participants) knew a Muslim man or at least a circumcised man who either died of HIV or who was believed to have had HIV:

> I know of a Muslim man. He died; it was *silimu* [HIV].

> Sometimes we look at those who have been circumcised culturally or religiously and find that they also die of HIV/AIDS as much as us who are not circumcised. It causes me to wonder, if one has died yet he was circumcised when he was still young, me who is not circumcised, I become doubtful [about circumcision].

Participants' beliefs about the lack of empirical efficacy were based on their knowledge that some people in their village had died or were considered to be HIV infected, yet they were presumed to be circumcised.

*Time too long to wait before sex resumption.* During the MMC trials in Rakai, we required men to abstain from intercourse after surgery until their wound had been certified (by a research clinician) as fully healed. This period generally lasted between 4 and 6 weeks (Kigozi et al., 2008). Many participants, particularly decliners, believed this period was too long for them to wait to resume sexual intercourse: "Again, as he said, you might find that some people say that they cannot live through this abstinence period. It could be that they are too greedy for sex."

*Time too long off work, leading to loss of income.* Participants mentioned that the waiting time before resuming work was a deterrent to undergoing the procedure/enrolling in the trial. Waiting time could lead to loss of employment and/or income. Participants who mentioned this were either engaged in the informal sector (including operating a small market stall) or in formal employment (at institutions such as schools or armed forces). In one of the FGDs with decliners, a participant indicated,

> I am a school truck driver at [school]. For that reason, my boss might want to go somewhere, so I have to work. Even for those who are self-employed, that day which he sacrifices or he is told to rest, he finds it hard to get what to eat.

*Association of circumcision with Islam.* Some participants reported that there were community members who worried that the goal of the circumcision program was to wipe out Christianity, because circumcision is traditionally associated with the Islamic faith:

> They [some community leaders] look at this practice with a feeling that these people want to promote Islam. There is someone that I talked to. He asked how an old man like him could be circumcised into Islam. . . . They will soon wipe us [Christians] out in that way.

## Motivators for MMC

*Prevention and treatment of STIs.* In all focus groups with acceptors and in more than half of the interviews, participants mentioned either prevention and/or treatment of STIs as a reason for their acceptance of MMC. Many stated that health educators had alluded to this benefit; some indicated that they had made observations from among the people they knew as circumcised who were not as frequently affected by STIs, whereas others had been advised by their peers to consider MMC as a response to their "endless" STIs problems. This perceived efficacy contributed to acceptability of MMC:

> The reasons which made me participate in this research . . . these colleagues who follow Islamic faith are required to be circumcised. . . . Basing on these colleagues, I saw it that their condition was admirable because they are not so easily attacked by diseases, especially *ez'obukaba* [STIs].

> What made me join the circumcision trial—I used to be frequently attacked by infections like *ekiwo* [chancroid] and *kabotongo* [syphilis]. The penis used to bulge every time I had sex. When the ballot randomized me to immediate circumcision and they circumcised me, now am very okay.

*Access to ancillary care.* Participants and community members viewed enrolment into the trial as an opportunity to access free medical care; others considered circumcision itself a treatment or solution to their health problems. Diseases including back pain, leg pain, penile infections, and loss of sexual potency were commonly discussed. Participants sought free treatment for STIs and other ailments through the trial. Others felt that trial participation was a form of medical insurance in case they needed free treatment in the future. One man said, "Well me, what made me join Rakai Project circumcision research was largely because of free medical treatment . . . even another time, who knows, if I get sick, they will provide that treatment, free, free of charge." Urban and rural acceptors and community members strongly and equally raised the incentive of free treatment for HIV, STIs, and other ailments as an incentive for MMC acceptance.

*Penile/personal hygiene.* Participants linked penile hygiene with "smelling of the body" and STIs. Most participants alluded to the challenges of having to bathe frequently because of limited access to water and modern facilities. Many felt that if one was circumcised he might not have to bathe so often:

> At times people are lazy at bathing. It brings to them the issue of contracting the diseases [STIs] which might seem to be destructive to their bodies. If this prepuce is present and they get little time for bathing, it is not the same as those who do not have. If they have sex with a woman and just put on their trousers without minding to bathe, the disease which would have easily been gotten rid of gets a hiding place and infects the penis.

*Peer influence.* Peer influence was mentioned in about half of the interviews and focus groups, and was more commonly mentioned by participants aged less than 20 years:

> What influenced me . . . was Joel. I was with Joel one day. Joel is the one who forced me [laughter] to bring him [Joel] here [Rakai offices]. I found out that there was something. [Laughter] I joined the seminars and I learned something. . . . I also accepted and participated in it.

*Desire to contribute to HIV-prevention research.* In about half the focus groups with acceptors, participants said they simply wanted to contribute to HIV prevention research and the good of their communities. Approximately one third of interview participants alluded to this altruistic motivation, as well. In this respect, some said they had been part of RHSP research for so long, and just wanted to continue contributing: "I only wanted to participate in this research because it could be of some help in the future and the future generation; *tomanya* [you never know]."

*Financial incentives.* All trial participants were given transport compensation and the equivalent of approximately US$2 as compensation for each day they spent at the research site. They also received approximately US$15 for time lost during the surgery and postoperative recovery period. Compensation for time and transportation were procedures approved by the CAB and IRBs. Most participants who mentioned financial compensation as a motivator stated this was true for others, but not for themselves. Decliners frequently reported that acceptors were motivated by financial compensation. Older acceptors reported that their younger counterparts could have been attracted by money, and vice versa:

> There are others who had come because of the financial incentives. But as an individual, it was because of my health. And even at this time I usually go to Rakai and get tested to know my health status. I have the [trial appointment] cards as well. Might be the youths needed money. For me, no.

*Therapeutic misconception.* The trials' communication protocols emphasized that the efficacy of MMC for HIV prevention had not been proven. Despite this, some participants, particularly acceptors, mentioned that they joined the trial because they believed circumcision would prevent them from getting HIV infection. Prevention was mostly discussed in the context of other STIs and sometimes in the context of unhygienic circumstances. One participant stated, "What influenced men, including myself, was to prevent diseases I told you about—diseases like AIDS, syphilis, and sexually transmitted diseases. And I think my friend thinks like me."

## *Factors That Act as Both Barriers to and Motivators for MMC*

*HIV testing and counseling.* Across participants, HTC was more of a motivator than a barrier to MMC. Both decliners and acceptors viewed circumcision as an opportunity to access HTC and subsequently HIV care and treatment if needed. Acceptors were more spontaneous in raising HTC as a motivator than decliners. One participant revealed,

> I wanted to know how I was standing. My *basirikale* [antibodies] had been depleted long time ago. . . . I did not know. When I turned up, I was told the news [that I was HIV positive]. I was also given medication. It's why I came.

Nevertheless, some participants saw HTC as a barrier to MMC. During the trials, all participants in the trial sponsored by the U.S. National Institutes of Health were required to receive HIV test results and posttest counseling; however, participants in the trial sponsored by the Bill and Melinda Gates Foundation were free to decline

receipt of results. Both MMC acceptors and decliners raised HTC as a barrier to circumcision, but decliners raised it as a barrier more than acceptors. Echoing comments made in almost all focus groups with decliners, one interview participant explained,

> You have to get your blood tested to establish whether you are positive or negative for HIV. It is one other important issue that they fear a lot. Most people in the villages fear learning that truly they are sick; indeed, they fear this.

*Partner influence.* The influence of one's female sexual partner toward MMC featured commonly as a barrier and occasionally as a motivator. This was contrary to our initial assumption that women would be supportive of MMC. Men reported that their female partners expressed concern that husbands might have more sexual partners as a result of perceived protection from circumcision: "They [women] think that as a man, you will become increasingly promiscuous, sleeping around, but if you do not involve in such [MMC], you might protect yourself by being faithful as you have been before." Men were also concerned about the possibility that their spouses would become sexually involved with other men during the wound-healing abstinence period:

> I hear the period you have to wait [before resuming sex] is long . . . you might get your wife into problems when she needs sex and she chooses to go in for sex with some other person. This one also fails us.

Partner influence was sometimes cited as a motivator for MMC, especially among acceptors. Some of those who raised sexual partner influence stated that either their partner was Muslim, or just liked a circumcised penis, or that it was more enjoyable to have sex with a circumcised man. One participant felt that most women actually preferred circumcision:

> Every woman that I have seen or talked with wants a man who is circumcised. . . . I cannot see how one can refuse [woman stopping the husband]. They [women] enjoy so much during that activity with her husband who is circumcised; far more than with one who is not circumcised.

*Fear of loss of sexual potency.* The perception that MMC improved or restored sexual potency was commonly reported. Local terms frequently used to describe it included *amaanyi* (sexual strength, sexual power, stamina). Often, lack of or deterioration of sexual potency was connected with being *omulwadde wa kabotongo* (syphilitic). Syphilis has a long history in Buganda as a nonstigmatizing disease, with many regarding it as a disease of the lineage. Kabotongo is implicated in causing sexual impotency or loss of sexual power. Many participants felt that circumcision would override the effect of kabotongo by restoring sexual strength:

> A circumcised man has sexual power. I could say that if I am not circumcised, I cannot be okay, *sirina manyi* [I lack power]. I have to go to the Muslims to get circumcised because circumcision will increase his sexual potency.

However, participants were more likely to associate MMC or anesthesia for MMC with loss of sexual potency (and therefore a barrier) than with improvement in sexual potency (and therefore a motivator). Local terms meaning "loss of manhood," "fire disappears," and "weak man" were used to describe decreased sexual potency: "People say that these injections [for anesthesia] might cause someone to lose his sexual manhood." "I know that by getting circumcised my fire disappears [laughter]."

## Discussion

In this study we examined barriers to and motivators for MMC in the Rakai trials before the results were known and endorsed by WHO and UNAIDS. Main barriers to uptake of MMC among the participants included fear of pain, lack of empirical efficacy, fear of medical complications (among decliners), and religion (mentioned by only a few participants). In terms of motivators, health benefits including STI prevention and personal hygiene were the most common. Peer influence was commonly reported among acceptors but never among decliners. Financial incentives were frequently mentioned, and HTC featured as an overlapping factor mentioned by acceptors and decliners. Using the findings from this study, we constructed a theoretical model for the acceptability of MMC in Rakai, Uganda (see Figure 1). In the model, key motivators for and barriers to adult MMC are listed in boxes A and B, whereas overlapping factors leaning more toward barriers are listed in box C, and overlapping factors leaning more toward motivators are listed in box D.

Fear of pain and medical complications were commonly reported barriers, especially among decliners, despite intensive health education. This finding is consistent with previous studies (Bailey, Muga, Poulussen, & Abicht, 2002; Westercamp & Bailey, 2007). These fears might be based on knowledge of circumcisions performed by nonmedical providers, especially during traditional ritual circumcisions, wherein enduring pain is the cornerstone of transition into manhood. MMC education should emphasize efforts made to prevent pain through local anesthesia and postoperative analgesia. Now that MMC services are being expanded, individuals who have undergone the procedure satisfactorily could be invited to share their experience with potential recipients to mitigate these fears.

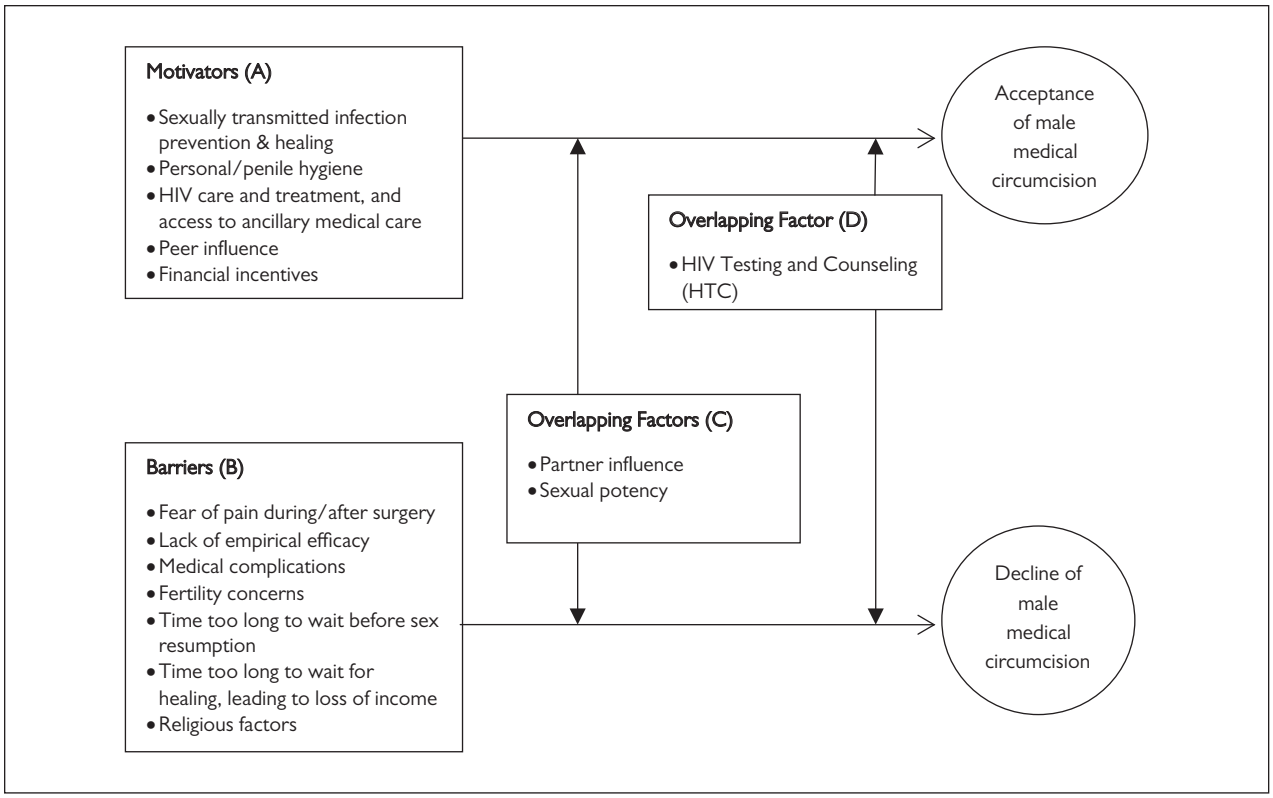


**Figure 1.** A theoretical model for the acceptability of adult male medical circumcision in Rakai, Uganda.

Lack of empirical efficacy (Young, 1980) of MMC for HIV prevention at the time of the study was a commonly reported barrier among decliners, but was not mentioned by acceptors. Probabilistic concepts such as "partial protection" are difficult to communicate effectively, and community members might have believed that one case of a circumcised man contracting HIV proves that MMC is not effective for HIV prevention. In Uganda, following this study, President Yoweri Museveni exacerbated the idea that those promoting MMC promised "false protection" when he denounced scientific claims that MMC could reduce HIV transmission:

> PRESIDENT Yoweri Museveni has trashed claims that circumcised men are less prone to HIV/Aids infection. . . . "Why are Muslims and Bagisu [two groups in Uganda that circumcise for religion and traditional purposes, respectively] dying? Who beats the Bagisu when it comes to circumcising men?" Mr. Museveni asked. (Nandutu, 2007, para. 2)

Health promoters need to devise contextually relevant approaches to explain the concept of probability to rural African populations. Some examples that could be used to explain probability include throwing a die, or imagining the likelihood that a blind monkey would choose a yellow banana from a basket that included both green and yellow bananas. Identifying and using the best local term (or terms) for probability, if one exists, is also essential in explaining partial protection and reduced risk. Additionally, we recommend that health researchers and promoters provide comprehensive and understandable information on the evidence about the protection MMC offers. It needs to be clearly communicated, for instance, that being circumcised does not mean a man can have sex without condoms and have no risk for HIV transmission or acquisition.

Time lost from work poses a challenge to MMC and other health procedures. Programs could consider offering services at night, during weekends, and long holidays, or schedule MMC activities based on seasonal patterns. In this case we recommend context-specific formative studies to understand what would work best in specific populations. Related concerns like the length of time before resumption of sex are also essential, given the possible risk associated with early resumption (Wawer et al., 2009).

Inviting sexual partners to support men in the healing process might help more men to undergo MMC and adhere to the recommended period of abstinence afterward. Some have proposed that men should be encouraged to accept MMC during their partners' postnatal period so that both partners are motivated to abstain. In

traditionally noncircumcising populations like those in Rakai, circumcision is sometimes associated with Islam. We noted that some aspects of religious association of MMC prevailed as barriers. One key lesson with religion and MMC in Rakai was that the local term for religious circumcision (*okutayirira*) is different from the term for MMC (*okukomola*, to trim). MMC scale-up programs ought to carefully evaluate their choice of local terminology.

Partner influence was more deterring than motivating, as a possible inducement for promiscuity (Bailey et al., 2002). Cultivating partner support for MMC remains key to its success. Audience-segmented health education should be considered for effective message delivery to female partners. Additional research on female partners' roles in MMC decision making and uptake is urgently needed. HTC was another overlapping factor. Among some participants, HTC was seen as an opportunity to know their HIV status and to access care (Thiessen et al., 2007). In the Rakai trials, participants had the option to learn their HIV results. HTC should not be a prerequisite to accessing MMC; however, it is part of the WHO circumcision package and should be available for MMC clients who wish to access it.

Community perception about MMC improving or causing the deterioration of sexual potency prevailed in our research setting. In Rakai, no trial participants reported adverse effects of MMC on sexual function and satisfaction (Kigozi et al., 2009). In Kenya, circumcised participants described being able to have more frequent sex, easier condom use, and fewer abrasions on the penis during sex (Riess, Achieng', Otieno, Ndinya-Achola, & Bailey, 2010). Nevertheless, providers should strengthen counseling about sexual activity in a manner that addresses potential MMC recipients' anxiety.

With access to health education on MMC in resource-limited settings, medical benefits appear to motivate men to accept MMC. Key motivators include HIV care and treatment, personal hygiene, and the desire to prevent STIs—including HIV. Participants reported that MMC "healed" their STIs. MMC providers should consider comprehensive STI counseling, screening, and treatment for MMC recipients using standard protocols.

Findings from this study should be interpreted in light of its limitations. First, we did not capture women's views on MMC. Whereas men in this study said that women were less supportive, it is imperative to know what women themselves think about MMC, what is needed for them to be supportive, and at what point in the process their engagement should be sought. In addition, we collected data on motivators for MMC after acceptors had received surgery and most had healed. Collecting data at multiple phases in the MMC process might facilitate a more nuanced understanding of potential changes in the perspectives of MMC recipients. Despite these limitations, we believe this study still provides valuable information about barriers to and motivators for MMC in the context of MMC trials in Rakai, Uganda. Understanding these barriers and motivators helped to improve the MMC program in Rakai and might provide insights that are useful for the improvement of other MMC programs in sub-Saharan Africa.

## Acknowledgments

Our sincere thanks go to Marta Hulley, Taryn Myers, and Maria Escorcio-Ymayo for supporting this study. We thank the Rakai study population, the Community Advisory Board, the Uganda Virus Research Institute Science and Ethics Committee, the Johns Hopkins Committee on Human Subject Research, and the Western IRB, as well as the Rakai study teams. To all hearts and minds that contributed, we thank you.

## Declaration of Conflicting Interests

The authors declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

## Funding

The authors disclosed receipt of the following financial support for the research, authorship, and/or publication of this article: This study was funded by the Fogarty International Center/ National Institutes of Health training grants numbers 5D43TW001508 and D43TW000010 at the Johns Hopkins Bloomberg School of Public Health.

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