AIDS Care
Vol. 23, No. 12, December 2011, 1578–1585

Routledge
Taylor & Francis Group

Acceptability of male circumcision for prevention of HIV infection among men and women in Uganda

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(*Received 23 June 2010; final version received 6 April 2011*)

In the last decade, three randomized controlled trials in Kenya, South Africa, and Uganda have shown that medical male circumcision (MMC) reduces the sexual transmission of HIV from women to men. Objectives of this assessment were to measure acceptability of adult MMC and circumcision of children to inform policies regarding whether and how to promote MMC as an HIV prevention strategy. This mixed-method study, conducted across four Ugandan districts, included a two-stage household survey of 833 adult males and 842 adult females, focus group discussions, and a health provider survey.

Respondents' acceptability of MMC was positive and substantial after being informed about the results of recent randomized trials. In uncircumcised men, between 40% and 62% across the districts would consider getting circumcised. Across the four districts between 60% and 86% of fathers and 49% and 95% of mothers were supportive of MMC for sons. Widespread support exists among men and women in this study for promoting MMC as part of Uganda's current 'ABC + ' HIV prevention strategy.

Keywords: HIV; male circumcision; infant circumcision; Uganda; acceptability; prevention

Introduction

In the last decade, three randomized controlled trials in Kenya, South Africa, and Uganda have shown that male circumcision (MC) can reduce the sexual transmission of HIV from women to men (Auvert et al., 2005; Bailey et al., 2007; Weiss, Quigley, & Hayes, 2000), leading the World Health Organization (WHO) and UNAIDS to issue a set of recommendations for the use of medical male circumcision (MMC) in HIV prevention efforts (WHO/UNAIDS, 2007). These recommendations suggest programs be implemented among populations where the prevalence of heterosexually transmitted HIV infection is high and prevalence of MC is low.

Studies conducted in sub-Saharan Africa suggest that MC acceptability is influenced by social, cultural, and religious beliefs about MC, perceived health and/or social risks and benefits of the procedure, and service delivery factors including availability, cost, safety, and side effects (Weiss et al., 2008; Westercamp & Bailey, 2007).

However, prior to the recent, positive findings of MMC effectiveness in preventing HIV transmission, only a few studies of MC had been conducted in Uganda. In one of the most recent studies, which assessed sexual behaviors and other HIV risk factors in circumcised and uncircumcised men in Mbale Town, Uganda in 1997 (Bailey, Stella, & Richard, 1999), 29% of interviewed uncircumcised men said they would consider being circumcised if the cost were minimal. This study was conducted before MC was found to effectively reduce HIV transmission and thus did not assess acceptability of circumcision for HIV prevention. The study did not report on whether non-circumcising populations would consider circumcising their children for health reasons, and if so, at which age.

Most efforts to date have focused on the adult MC. For example, through a rapid results initiative in regions of Kenya, over 90,000 adult male circumcisions were performed as of January 2010 (Dickenson & WHO, 2010). Circumcision of male children, however, has received less attention from public health professionals. Modelling shows that a larger public health benefit could accrue from infant circumcision and that infant circumcision is safer and yields fewer adverse events (WHO/UNAIDS, 2007).

The current mixed-method study assessed popular and policy-level attitudes, as well as provider

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ISSN 0954-0121 print/ISSN 1360-0451 online

http://dx.doi.org/10.1080/09540121.2011.579939
http://www.tandfonline.com

opinions, related to MMC in four Ugandan districts in order to provide decision makers with adequate information about whether to promote male circumcision as a part of their HIV prevention strategy.

Methods

This study was conducted in accordance with recommendations from the WHO guide, ''Male Circumcision Situation Analysis Toolkit'' (WHO, 2009). Research activities included: (1) a household survey of men and women; (2) focus group discussions (FGDs); (3) male circumcision facility and health practitioner surveys; and (4) stakeholders' workshops at the national and local level. The current manuscript focuses on quantitative results from the household survey, complimented by results from facility and practitioner surveys conducted in March and April of 2008.

Following WHO toolkit guidelines, MC assessments were undertaken in four districts: (1) Kampala, the district with the largest population/capital city; (2) Gulu, a large town in a non-male circumcision area; (3) Kumi, a rural district in a non-male circumcision area that is near a district that practices male circumcision; and (4) Rukungiri, a non-male circumcision area that is geographically distant from 2 to 3 (Table 1).

Household survey

Sample

To obtain a sample that was representative of the population of each district, separate, two-stage cluster sampling strategy was used in each of the four selected districts. The primary sampling units (PSU) were the 2001 population census enumeration areas and the Secondary Sampling Units (SSU) were households. Thirty PSU were randomly selected within each district, and 14 SSU were quasi-randomly selected within each PSU for sampling (seven each for men and women). In a few cases, selected SSUs were unreachable and were replaced with new sampling units. No data detailing non-response rates to the household survey are available.

Survey eligibility included being: (1) at least 18 years of age; and (2) the parent of at least one child. A total of 1677 men and women – approximately 210 men and 210 women per district – participated in the household survey which aimed to explore the knowledge and personal preferences of men and women regarding MMC, for themselves and their male children. The interviewer-administered survey instrument was brief, focused, and translated into the local language.

Measures

There were three main measures for this study: (1) willingness to circumcise among uncircumcised men; (2) willingness to circumcise male children; and (3) best age for circumcision. Prior to administering these questions, all household survey respondents were provided with a health message linking MC to reduced HIV infection: ''Recent studies show that male circumcision reduces the risk of being infected with HIV. Being circumcised is not enough on its own to protect from HIV and circumcised men MUST continue using other forms of protection.'' After provision of the message, uncircumcised men were asked: ''Based on this information would you consider being circumcised?'' All household survey respondents, male and female, with or without sons, were asked: ''If you have or had a son, would you support your son's circumcision?'' All survey respondents were also asked: ''When would your son be circumcised?''

Analyses followed a pre-specified plan. Two male survey respondents who did not provide circumcision status were excluded from analysis. Also, in some instances, skip patterns prescribed in the survey were not followed during survey administration. Such cases were programmatically corrected in SAS V9.1 at the time of analysis.

Focus group discussions

Approximately 30 FGDs were conducted in each district, averaging 10 individuals each with similar

Table 1. Districts selected for the situation analysis and the prevalence of circumcision and HIV among men, by region.

District	Region	Characteristic	% circumcised	% HIV +
Kampala	Kampala	Capital	37.9	4.5
Gulu	North Central	Large city, non-circumcision area	2.4	7.1
Kumi	Northeast	Rural, non-circumcision, near circumcising area	4.9	3.2
Rukungiri	Southwest	Non-circumcision area, distant from Gulu and Kumi	7.6	4.4

Source: Uganda HIV/AIDS Sero-behavioral Survey 2004–2005, conducted by the Uganda Ministry of Health.

backgrounds based on sex, age, and circumcision status (for men). FGDs were conducted in the local language; the discussion guide was translated into local languages and then back-translated to English in order to ensure accuracy of terms.

Health care provider survey

A total of 59 health practitioners were surveyed across the four focal districts, with Kampala providing the majority of data (42 interviews). Two-thirds of all interviews were conducted with hospital staff; remaining interviews were from staff from smaller health centers. A range of government, faith-based, non-faith-based NGOs, and private for-profit facilities were represented. Staff were surveyed to assess their current practices in MC as well as their overall attitudes towards the practice. Only 34 of 59 practitioners (58%) had ever performed a male circumcision, with circumcisions being performed across all age groups.

Results

We focus primarily on results from the household survey. Background characteristics of household survey respondents are provided in Table 2. Most respondents were Catholic or Protestant, except in Kampala district where approximately one-quarter were Muslim. All Kampala district residents lived in the city, while most residents in Gulu, Kumi, and Rukungiri districts were rural. Of the 833 men who provided circumcision status, only 134 were circumcised. There were very few circumcised respondents from Gulu, Kumi, and Rukungiri. In Kampala, 40% of male respondents reported being circumcised (Table 2).

Table 2. General characteristics of household survey respondents ($n = 1675$).

	Kampala district ($n = 418$)	Gulu district ($n = 421$)	Kumi district ($n = 416$)	Rukungiri district ($n = 420$)
Females ($n = 842$)	($n = 210$)	($n = 211$)	($n = 211$)	($n = 210$)
Mean age (range)	30.1 (16–62)	35.2 (17–70)	33.6 (19–60)	35.7 (18–80)
Mean number of sons (range)	2.1 (1–10)	2.3 (1–7)	2.8 (1–8)	2.4 (1–9)
Mean number of daughters (range)	2.0 (1–6)	2.7 (1–9)	2.5 (1–8)	2.3 (1–7)
Religion (%)[a]				
Catholic	28	76	45	39
Protestant	31	17	49	52
Muslim	29	2	1	2
Other	11	4	4	6
Residence (%)[a]				
Rural	–	73	97	100
Urban	100	27	3	–
Males ($n = 833$)	($n = 208$)	($n = 210$)	($n = 205$)	($n = 210$)
Mean age (range)	31.8 (19–67)	35.1 (18–77)	37.8 (20–71)	42 (20–80)
Mean number of sons (range)	2.2 (1–20)	2.7 (1–8)	3.0 (1–13)	2.7 (1–15)
Mean number of daughters (range)	2.3 (1–15)	2.4 (1–7)	2.9 (1–8)	2.6 (1–11)
Religion (%)[a]				
Catholic	39	77	42	35
Protestant	32	19	49	57
Muslim	21	2	2	2
Other	7	2	6	6
Residence (%)[a]				
Rural	–	67	96	98
Urban	100	33	4	2
Circumcised (%)[b]	40 ($n = 84$)	12 ($n = 26$)	4 ($n = 8$)	8 ($n = 16$)
Uncircumcised (%)[b]	60 ($n = 124$)	88 ($n = 184$)	96 ($n = 197$)	92 ($n = 194$)

[a]Percents are rounded to nearest integer, so may not add up to 100.
[b]Two males have been excluded from analysis due to missing results on circumcision status.

Outcomes

Willingness of uncircumcised men to undergo MC

The proportion of uncircumcised men ($n = 699$) who supported circumcision for themselves ranged from 40% in Rukungiri to 62% in Kampala (Figure 1). In more than half of FGDs, participants emphasized the many positive health benefits that MC was perceived to have, including reduction in sexually transmitted infections (STIs) and HIV/AIDS transmission and increased hygiene. Similarly, more than 90% of health care providers stated that male circumcision improves hygiene and provides some protection against sexually transmitted diseases (STDs) and HIV. Circumcision was also perceived by some FGD participants to increase men's sex drive and/or women's sexual pleasure – a benefit in the eyes of many, but a point of concern among others who believed that circumcised men would engage in riskier sex. For example, one Kumi man suggested: "*It also promotes promiscuity among men, because they will think they are now safe to have live sex with anyone – which means they may end up getting HIV*." In addition, men and women worried about the medical procedure itself, including pain, infection, disfigurement, death, or even contracting HIV during the procedure. Finally, some were concerned about the need for financial assistance during the recovery period to help maintain their family income.

Willingness to circumcise one's son

Willingness of all men ($n = 833$) to have their sons circumcised was very high (Figure 1). Overall, men's support of a son's circumcision ranged from to 86% in Kampala to 60% in Kumi. When examined by circumcision status, uncircumcised men in Kampala District were the most likely – and in Kumi District least likely – to support circumcision for their male children (79% vs 59% supportive – Figure 1). Almost all circumcised men (96% in Kampala and 100% in the three other districts) were willing to support their son's circumcision (Figure 1).

In every district except Kumi, a higher percentage of women ($n = 842$) than men ($n = 833$) were willing to circumcise their sons (Figure 1). Women's support of a son's circumcision ranged from 95% in Kampala to 49% in Kumi.

Among uncircumcised men, place of birth (rural/urban) did not have a strong effect on the rate of acceptability of son circumcision. In Gulu, the only district with a substantial number of both rural ($n = 116$) and urban ($n = 58$) residents, acceptability of sons' circumcision was strong at 67% and 72%, respectively.

Across districts, all Muslim males in the household survey reported being circumcised. Among uncircumcised men, acceptability to have one's son circumcised was strong across religions, with Protestants in Kumi being the least supportive (57%) and

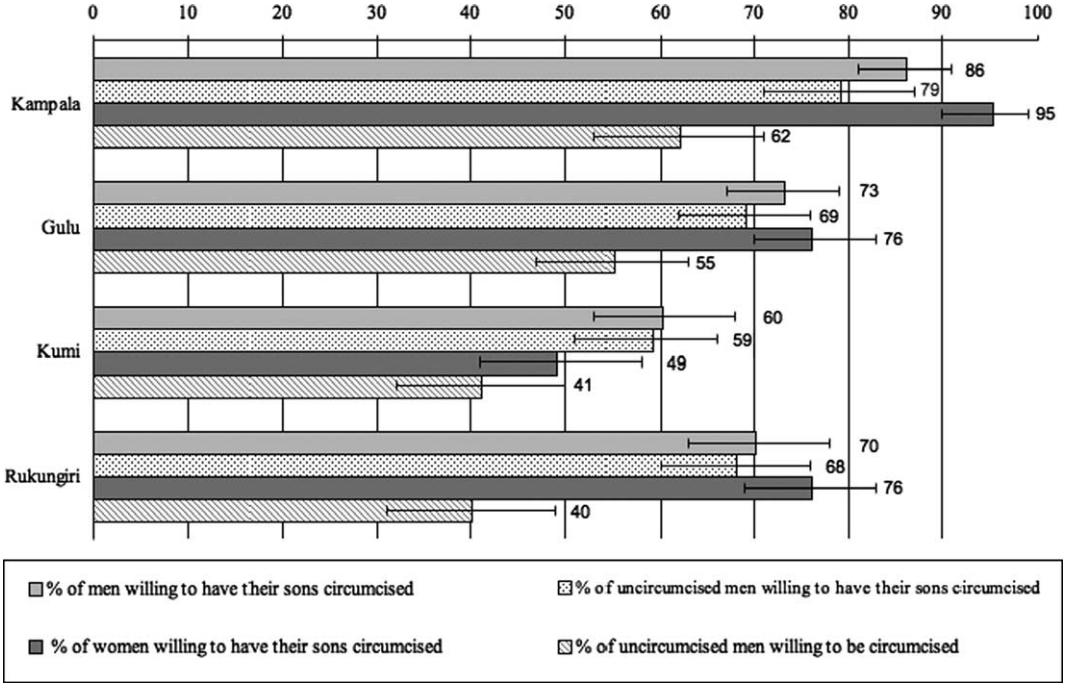

Figure 1. Percent willingness to circumcise son or self by district (95% CI).*For circumcised men: 96% in Kampala and 100% in the three other districts were willing to have their sons circumcised.

Protestants in Kampala being the strongest supporters (81%). In Kumi, only 46% ($n = 13$) of other religions or non-religious participants supported circumcision.

Some respondents did change their opinion about circumcising their sons after provision of the health message, but there was no reduction in support in any district. In Kampala, Gulu, and Kumi, percent support of circumcised males ($n = 134$) remained exactly the same before and after the health message. Overall, women were more likely than men to increase their level of support (Table 3). About half of women in Kampala, Gulu, and Rukungiri districts increased their support after hearing the health message, while about one-third of the uncircumcised men in Gulu and Kumi districts did the same.

In FGDs, the most common reason for supporting a son's circumcision was to prevent HIV/AIDS or to provide for a "healthier future", more generally. As one male participant from Gulu expressed: "*With this new [HIV reduction] information, to say no to the circumcision of our children is to deliberately destroy their future*."

Nevertheless, FGDs also raised a number of concerns and challenges to MC promotion. These included concerns about cost, pain associated with the procedure, a perception by some that circumcision would signify a religious conversion, or that it would encourage their children to engage in risky sexual activity. A few participants suggested that more information was needed about the health benefits of male circumcision.

Age at which men and women would consider MC for their sons

Overall, household survey participants supported MC during infancy (0–1 years) or childhood (2–9 years), rather than adolescence (10–17 years) or adulthood (18 and over) (Table 4). However, there was some variation by gender and district. Half of men and about two-thirds of women in Kampala (the district with the largest Muslim population) preferred to circumcise infants. Similar results were found in Rukungiri, the more distant rural district. However, in Gulu and Kumi districts women seemed equally divided between infancy, childhood and adolescence; while men showed some preference for childhood circumcision. Notably, approximately one-half (54%) of the health care practitioners believed that infant circumcision was best, followed by childhood (25%), adulthood (13%), and lastly adolescence (6%).

Discussion

Acceptability

Between 40% and 60% of uncircumcised men were willing to consider MC for themselves – while lower overall than acceptability of sons' circumcision, these rates are much higher than the 29% reported by Bailey et al. in 1999. FGD data highlighted potential barriers to MC during adulthood, including concerns about the medical procedure itself, but also perceptions linked to religious or cultural identity and influence on post-procedure risk behaviors. Data from men enrolled in the Kenya trial that linked MC to reduced HIV rates, however, did not provide evidence of increased HIV risk behavior, on average, following MMC (Mattson et al., 2008). Nonetheless, risk compensation remains a concern in MC roll-out and needs to be carefully and effectively addressed in communication strategies for MC scale-up (WHO/UNAIDS, 2007).

Importantly, this study demonstrated moderate to strong acceptability, across the four districts, for circumcising sons. Almost all circumcised men supported circumcision of their sons. In addition, the majority of women and uncircumcised men in all but Kumi district supported MC for their sons. In general, survey participants preferred circumcision at younger ages (i.e., 0–9 years), rather than during adolescence or adulthood. This finding was echoed by health care providers.

Table 3. Proportion of female and uncircumcised male respondents who initially did not support circumcision of their sons, but increased their support after provision of the health message.

	District							
	Kampala		Gulu		Kumi		Rukungiri	
	Males ($n = 26$)	Females ($n = 18$)	Males ($n = 78$)	Females ($n = 101$)	Males ($n = 118$)	Females ($n = 118$)	Males ($n = 77$)	Females ($n = 96$)
Increased support (%)	4	44	32	51	34	11	19	49

Table 4. When would your son be circumcised?

	Female ($n=842$)				Uncircumcised males ($n=699$)			
Result	Kampala ($n=210$)	Gulu ($n=211$)	Kumi ($n=211$)	Rukungiri ($n=210$)	Kampala ($n=124$)	Gulu ($n=184$)	Kumi ($n=197$)	Rukungiri ($n=194$)
Infant (0–1 years)								
n	133	50	28	100	48	18	31	55
Percent	67	31	27	63	55	15	28	42
95% CI	(59, 75)	(23, 40)	(16, 38)	(55, 71)	(44, 66)	(8, 22)	(18, 38)	(33, 51)
Child (2–9 years)								
n	31	57	31	34	32	51	46	48
Percent	16	36	30	22	36	43	42	36
95% CI	(11, 21)	(27, 44)	(18, 42)	(15, 28)	(26, 47)	(33, 53)	(31, 53)	(27, 45)
Adolescent (10–17 years)								
n	13	37	27	17	4	34	25	20
Percent	7	23	26	11	5	29	23	15
95% CI	(2, 11)	(16, 30)	(17, 35)	(5, 17)	(0, 9)	(21, 37)	(15, 30)	(9, 21)
Adult (18 and over)								
n	20	16	15	6	1	11	7	6
Percent	10	10	15	4	1	9	6	5
95% CI	(6, 14)	(5, 15)	(6, 24)	(1, 7)	(0, 3)	(4, 15)	(2, 11)	(1, 8)
Don't know								
n	1	–	2	1	3	4	1	3
Percent	1		2	1	3	3	1	2
95% CI	(0, 2)		(0, 5)	(0, 2)	(0, 7)	(0, 7)	(0, 3)	(0, 5)

Indeed, a recent cost-effectiveness study on male circumcision in Rwanda concluded that while an MC rollout should be devised for all ages, an emphasis should be on the very young (Binagwaho, Pegurri, Muita, & Bertozzi, 2010). The advantages of infant over adult circumcision include lower complication rates and a more rapid healing time – of approximately 1 week versus 4–6 weeks for adults, when performed in clinical settings with trained personnel (WHO & JHPIEGO, 2008). It should be noted that adolescent and adult circumcision is believed to provide a more immediate and rapid effect on the HIV epidemic than circumcision of infants and young children (WHO/UNAIDS, 2007). Circumcision with neonates is much simpler and less risky; therefore, the acceptability of infant circumcision in Uganda is important for long-term HIV prevention strategies (WHO/UNAIDS, 2007).

Introduction strategies for MMC must consider how best to accommodate the traditional practices that exist in some parts of the country. The potential demand for circumcision at older ages should be considered, as well as how to effectively communicate messages about partial protection of MC and the need to sustain other risk reduction behaviors, including faithfulness, partner reduction and condom use.

Traditional versus medical male circumcision

Current research is under way in Uganda to examine the attitudes of traditional circumcisers towards MMC. The results of this study should inform how to better position the introduction of MMC in areas of varying tradition in Uganda. As pointed out in past research, the government will need to address how best to incorporate or change traditional circumcision practices that may be harmful, including the sharing of knives or circumcision festivities that "create opportunities for adolescents and adults to engage in risky sexual practices" and pressure for the newly circumcised boy to have sex with a woman to prove his manhood (Asiimwe, Kibombo, & Neema, 2003).

Another consideration for public health practitioners is to determine whether the definition of MMC is clearly conveyed through media sources. Some traditional circumcisions in sub-Saharan Africa are reported to have as little as 1 cm of foreskin removed (Brown et al., 2001). The amount of foreskin removed in the traditional circumcision may not coincide with the standards of foreskin removal used in the three trials showing HIV protection with MC (Brown et al., 2001; Wang, Duke, & Schmid, 2009).

Male circumcision roll out

The Ugandan Ministry of Health (MOH) rolled out an official Safe Male Circumcision Policy in 2010 (Government of Uganda MOH, 2010). Given the groundwork laid out by 13 other countries that have implemented MMC policies (PlusNews, 2010), Uganda has the opportunity to apply lessons learned. Kenya launched its voluntary MMC programs on the foundation of the successful circumcision trial in Kisumu (Otieno, 2010). In contrast, the Ugandan MOH may need to address fears generated from negative media attention of early closures in recent HIV prevention trials. Recently, a clinical trial in Rakai, Uganda that aimed to test the effectiveness of MMC in reducing risk of HIV infection in female partners was stopped early due to futility (Wawer et al., 2009). A 2007 review of HIV/AIDS print media in sub-Saharan Africa found that while most print media were accurate, important messages were sometimes omitted, and that public health officials could play a more active part in coordinating MC roll out and media activities (Wang et al., 2009). For example, potentially misleading headlines reported ''Circumcision helps protect men, not women from AIDS'' (Fox, 2009), suggesting the absence of even an indirect benefit to women.

While this acceptability study shows strong support of MMC for HIV prevention by Ugandan men and women, it is evident from FGD data that concerns remain about increased promiscuity following MC procedures. Culturally tailored communication messages regarding partial protection of MC and the necessity of continued condom use should accompany MMC introduction.

Acknowledgements

We thank Mark Weaver for biostatistics support on this study. We also thank the data collectors who worked diligently during the rainy season in Uganda. This study was funded by USAID and CRTU number GPO-A-00-05-00022-00. The views expressed in this article do not necessarily reflect those of USAID or of Family Health International.

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