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The acceptability of male circumcision as an HIV intervention among a rural Zulu population, KwaZulu-Natal, South Africa

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Abstract
Epidemiological and biological studies provide compelling evidence for the protective effect of male circumcision against the acquisition of HIV. Three randomized controlled trials are currently underway to assess the impact of male circumcision as an HIV intervention in traditionally non-circumcising areas with high levels of heterosexually-transmitted infection. This study explores the acceptability of male circumcision among the rural Zulu around Hlabisa and Mtubatuba, KwaZulu-Natal, South Africa. A cross-sectional convenience sample of 100 men and 44 women was surveyed, and two male focus groups held, to ascertain circumcision preferences within the population. Four in-depth interviews with service providers assessed the feasibility of promoting male circumcision. Fifty-one per cent of uncircumcised men and 68% of women favoured male circumcision of themselves or their partners; while 50% of men and 73% of women would circumcise their sons. For men, the main predictors of circumcision preference pertained to beliefs surrounding sexual pain and pleasure; for women, knowledge about the relationship between male circumcision status and STI acquisition was the key indicator for circumcision preference. Among both sexes the main barrier to circumcision was fear of pain and death. The greatest logistical barrier was that circumcision can presently only be carried out by trained hospital doctors.

Introduction

At the end of 2003, 40 million people worldwide were living with HIV, 60% of them in sub-Saharan Africa, where over 90% of adult infections are estimated to be transmitted through heterosexual intercourse (UNAIDS, 2003). HIV prevention remains the primary method of controlling the epidemic (van Dam & Anastasi, 2000), and epidemiological and biological evidence suggests that promotion of male circumcision (MC) may be a potential intervention measure to reduce risk of acquisition of HIV in men. While there is consensus that male circumcision should not be actively promoted for HIV prevention until this finding is confirmed from three ongoing randomized controlled trials (USAID 2003),

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further information on the acceptability and feasibility of promoting MC in traditionally non-circumcising communities is needed in anticipation of the findings.

Two ecological studies have shown HIV infection rates to be highest in traditionally non-circumcising areas of sub-Saharan Africa (Bongaarts et al., 1989; Caldwell & Caldwell, 1994). A systematic review and meta-analysis of 27 epidemiological studies in sub-Saharan Africa showed circumcised men to be at under half the risk of acquiring HIV compared with uncircumcised men (adjusted RR $=0.42$, 95% CI: 0.34–0.54) (Weiss et al., 2000).

Hlabisa Tribal Authority is in northern KwaZulu-Natal (KZN), one of South Africa's most heavily HIV-afflicted provinces. HIV prevalence is 36.2% in the general population across KZN and up to 42% in urban Hlabisa (Herbst & Welz, 2002; UNAIDS, 2003). STI rates are also high and between 33% and 40% of men attending STI clinics are co-infected with HIV (Herbst & Welz, 2002). Not only is HIV prevalence among the general population high, but also among younger age groups indicating recent infections and growth of the epidemic and the great potential of male circumcision to impact incident cases of the disease.

Condom use in this population is low—a recent study found that while 85% of respondents believed that individuals can protect themselves from acquiring HIV/AIDS by using condoms during sexual intercourse, only 12% of women who were ever sexually active reported using a condom at last intercourse (Camlin & Chimbwete, 2003).

This study investigates the acceptability of MC among the Zulu around Hlabisa and Mtubatuba, KwaZulu-Natal, South Africa. In this population, MC was traditionally carried out until the mid-nineteenth century when the practice was abandoned by order of Chief Shaka (Caldwell & Caldwell, 1994; Marck, 1997), but there may be potential for reintroducing it as an additional HIV prevention measure.

Methods

Ethical clearance was granted by the University of Natal in July 2002. A six-week study was conducted from the Africa Centre for Health and Population Studies, Mtubatuba, South Africa.

Short structured interviews were carried out with 100 men and 44 women following a piloting of the interview script. Interviewees were recruited on a convenience basis from nine communities with the aid of Community Advisory Board members and a community health worker to be as representative of the general population as possible (Table I).

Interviews included open-ended questions to allow better interpretation of survey findings; while two focus group discussions with men allowed further discussion of points of interest arising from individual interviews, and initial indications of the potential influence of group dynamics on individual opinion. All male interviews and FGDs were carried out by the same pre-trained native Zulu translator; while female interviews were carried out by female members of the community as women were more at ease being interviewed by one of their own.

Results from survey questions were double-entered into EpiInfo and converted to Stata for analysis. Univariate analyses were carried out for sociodemographic variables, and variables with a substantial effect (OR >2 or OR <0.5) were retained in a multivariate model. Variables on beliefs around health and sexual aspects of circumcision were then adjusted for these sociodemographic variables. The variables on belief were not adjusted for

Table I. Characteristics of study and general population[1].

Characteristic	Males		Females	
	Study (n=100) n (%)	General pop. (n=23,266) n (%)	Study (n=44) n (%)	General population (26,909) n (%)
Age group				
<20	28 (28)	4342 (19)	8 (18)	4624 (17)
20–29	32 (32)	7816 (33)	12 (27)	8746 (33)
30–44	20 (20)	6570 (28)	15 (34)	7970 (30)
45–76	20 (20)	4538 (20)	9 (20)	5569 (20)
Marital status:				
Single	77 (77)	17,266 (78)	23 (64)	18,348 (78)
Married	23 (23)	4858 (22)	16 (36)	5259 (22)
Residence type:				
Rural	91 (91)	Not available	44 (100)	Not available
Township/urban	9 (9)		0 (0.0)	
Ethnic group:				
Zulu	96 (96)	Not available but thought to be predom Zulu	44 (100)	Not available
Other	4 (4)		0 (0.0)	
Educational level:				
None	4 (4)	2926 (14)	5 (11)	3917 (16)
Primary	13 (13)	5808 (28)	11 (25)	6660 (28)
Up to standard 8	34 (34)	7400 (36)	14 (32)	8187 (34)
Up to standard 10	24 (24)	3910 (19)	11 (25)	4177 (17)
Tertiary	5 (5)	709 (3)	3 (7)	1088 (5)
Religion:		(M+F)		(M+F)
Catholic	4 (4)	610 (6)	0 (0)	610 (6)
Zionist	27 (27)	3521 (33)	20 (46)	3521 (33)
Nazareth Baptist (Shembe)	15 (15)	1952 (19)	12 (27)	1952 (19)
Lutheran	15 (15)	616 (6)	1 (2)	616 (6)
None	16 (16)	598 (6)	1 (2)	598 (6)
Other	23 (23)	3248 (31)	10 (23)	3248 (31)
Employment status:				
Employed	15 (15)	8992 (43)	6 (14)	7621 (31)
Unemployed	85 (85)	12025 (57)	37 (86)	16,699 (69)
Circumcision status of self/primary partner:				
Circumcised	13 (13)	Not available	3 (7.0)	Not available
Uncircumcised	87 (87)		26 (59.1)	
Doesn't know	0 (0)		15 (34.0)	
Willing for self/primary partner to be circumcised:	n=87		n=41	
Yes	44 (51)	NA	27 (66)	NA
No	38 (44)		6 (15)	
Don't know	5 (5)		8 (20)	
Preferred age for circumcision	Median=15 Range=0–34	NA	Median=15 Range=0–25	NA
Preferred person to carry out procedure:				
Doctor/surgeon	75 (77)	NA	34 (77)	NA
Nurse	8 (8)		2 (5)	
Traditional healer	11 (11)		7 (16)	
Other	3 (3)		1 (2)	

[1] Population attained from the Africa Centre Demographic Information System (ACDIS, 2000) for the study area (Hosegood & Timaeus, 2001).

each other due to potential conceptual links between them, which would underestimate their effect (Victora et al., 1997). Responses to open-ended questions and FGDs were recorded and transcribed within 24 hours and analyzed descriptively by hand.

Unstructured interviews were carried out in English with four service providers (medical hospital doctor, STI clinic sister and two traditional healers) to obtain initial indications of the feasibility of promoting male circumcision within the South African context.

Results

Structured interviews

The study population was predominantly young (median age = 26 years for men, 34 years for women) and single (77% of men, 64% of women), were mostly from rural areas and of the Zulu ethnic group (see Table I). The male study population was similar to the general population (Hosegood, personal communication) in terms of age, marital status, education and religion. However, our study population had a high proportion of unemployed men (85%) compared with the DHS population (57%). The female study population was more likely to be married, and also more likely to be unemployed (86%) compared with the DHS population (69%). This was probably due to interviews taking place during working hours. Official marriage rates were low in both the study and general population, which may be partially due to the expense of *lobola* (dowry) that can not be afforded by many men until later in life (Hosegood & Preston-Whyte, 2004).

Among the 100 men interviewed, 56% said that they would be circumcised if the procedure could be performed safely at low cost. Omitting the 13 men already circumcised, the percentage fell slightly to 51%. Similarly, 50% of men said that they would choose to circumcise their sons.

Forty-one women (93%) had an uncircumcised primary partner, or were unsure of their partner's circumcision status. Of these, 66% said that they would prefer their primary partner to be circumcised and 72.3% of all women said they would circumcise their sons.

The preferred age for circumcision ranged from newborn to age 34, with a median age of 15 years among both men and women. There appeared to be conflict between whether boys should be circumcised as babies when the procedure would be simpler and the boys unafraid, or as adults when they would be free to decide for themselves. Of the 97 men who answered, 75 thought that circumcision should be carried out by a doctor, with 11 favouring traditional healers. Results were similar in women: 34 favouring doctors for carrying out the procedure and seven favouring traditional healers.

Factors associated with willingness to be circumcised are shown in Table II. In multivariate analyses, men were more willing to be circumcised if they lived in an urban area, were single, were employed and had a higher education level. There was little association between willingness to be circumcised and beliefs about health aspects of circumcision (keeping the penis clean, catching STIs/HIV, pain during intercourse), although when asked to give reasons as to why they would be circumcised, more men (34) included reduced risk of STI among their responses than any other reason. Men who did not know or have a view on the health aspects of circumcision were generally the least willing to be circumcised.

Significant associations were found between willingness to be circumcised and beliefs about sexual pleasure. Men were more willing to be circumcised if they thought that circumcised men enjoyed sex more than uncircumcised men (adjusted OR = 7.73, 95% CI

Table II. Factors associated with willingness of men to be circumcised, if it could be performed safely and at low cost ($n = 94$).

Characteristic/belief	Would circumcise $n = 56$ n (%)	Would not circumcise $n = 38$ n (%)	Odds ratio (95% CI)	Adjusted odds ratio (95% CI)
Sociodemographic characteristics:				
Residential area				
Rural	48 (57)	37 (44)	1.0	1.0
Township/urban	8 (89)	1 (11)	6.17 (0.7–51.5)	5.17 (0.6–48)
Age:				
Over 21	34 (55.7)	27 (44)	1	
21 and under	22 (66.7)	11 (33)	1.59 (0.7–3.8)	
Circumcision status:				
Circumcised	44 (54)	38 (46)	–	
Uncircumcised	12 (100)	0 (0)		
Religion:				
Nazareth Baptist/Shembe	10 (71)	4 (29)	1.0	
Other	46 (58)	34 (42)	0.54 (0.2–1.9)	
Marital status:				
Single	47 (62)	25 (35)	1.0	1.0
Married	9 (41)	13 (29)	0.37 (0.1–1.0)	0.44 (0.1–1.5)
Employment status:				
Unemployed	24 (46)	28 (54)	1.0	1.0
Employed	13 (93)	1 (7)	15.16 (1.9–124)	13.7 (1.6–118)
Student	19 (67.9)	9 (32)	2.46 (0.9–6.4)	1.88 (0.6–5.5)
Educational level:				
Above Grade 8	34 (56)	24 (44)	1.0	1.0
Up to Grade 8	22 (67)	11 (33)	2.78 (1.2–6.5)	1.96 (0.8–5.0)
Beliefs around health aspects of circumcision:				
Harder to keep penis clean if:				
Circumcised	24 (77)	7 (23)	1.0	1.0
Uncircumcised	26 (68)	12 (32)	0.63 (0.2–1.9)	1.45 (0.4–5.0)
No difference	5 (31)	11 (68.8)	0.13 (0.03–0.5)	0.11 (0.02–0.6)
Don't know	1 (11)	8 (89)	0.03 (0.004–0.3)	0.09 (0.01–0.9)
Easier to catch STIs if:				
Circumcised	6 (67)	3 (33)	1.0	1.0
Uncircumcised	41 (67)	20 (33)	1.03 (0.2–4.5)	0.73 (0.1–3.9)
No difference	6 (40)	9 (60)	0.33 (0.06–1.9)	0.19 (0.02–1.5)
Don't know	3 (33)	6 (67)	0.25 (0.04–1.8)	0.25 (0.03–2.3)
Easier to catch HIV if:				
Circumcised	5 (71)	2 (29)	1.0	1.0
Uncircumcised	28 (70)	12 (30)	0.93 (0.2–5.5)	0.76 (0.1–5.4)
No difference	21 (60)	14 (40)	0.60 (0.1–3.5)	0.52 (0.1–3.9)
Don't know	2 (17)	10 (83)	0.08 (0.01–0.8)	0.05 (0.003–0.8)
Experience more pain during sexual intercourse if:				
Circumcised	4 (40)	6 (60)	1.0	1.0
Uncircumcised	50 (71)	20 (29)	3.75 (0.96–14.7)	(0.7–17.6)
No difference	2 (25)	6 (75)	0.5 (0.07–3.9)	0.41 (0.03–5.9)
Don't know	0 (0)	6 (100)	–	–
Beliefs around sexual aspects of circumcision:				
Circumcised men enjoy sex:				
Less than uncircumcised men	3 (27)	8 (73)	1.0	1.0
More than uncircumcised men	39 (80)	10 (20)	10.4 (2.3–46.5)	7.73 (1.6–38.3)
The same as uncircumcised men	10 (50)	10 (50)	2.67 (0.5–13.1)	2.30 (0.4–13.1)
Don't know	4 (29)	10 (71)	1.07 (0.2–6.2)	0.94 (0.1–7.2)
Women enjoy sex more with:				
Uncircumcised men	3 (27)	8 (73)	1.0	1.0
Circumcised men	36 (77)	11 (23)	8.73 (2.0–38.7)	5.84 (1.2–29.3)
No difference	9 (50)	9 (50)	2.67 (0.5–13.4)	2.37 (0.4–14.2)
Don't know	8 (44)	10 (56)	2.13 (0.4–10.8)	2.34 (0.4–13.4)

1.6–38.3), or if women enjoyed sex more with uncircumcised men (adjusted OR = 5.84, 95% CI 1.2–29.3), a reason rarely reported in open questions.

The most frequently cited reason for a man choosing not to circumcise either himself or his son was a fear of pain and even death as a result of the procedure, with 44 men citing fear as a primary motivator not to be circumcised. Culture was cited by 11 men.

There was little statistical power to assess factors associated with women's attitudes towards male circumcision. However, when asked why they would choose to have their partners and/or sons circumcised, most cited the role of circumcision in reducing the risk of STIs. While not directly asked how their partners might respond if women asked them to opt for circumcision, a few voluntarily voiced concerns about their partner's willingness to be circumcised: 'I can choose, but maybe he can refuse.'

Though 66% of men and 64% of women cited that circumcision could provide protection from STIs, including HIV/AIDS, only two males and two females cited that it could afford total protection from them. Nine men explicitly said that anyone could catch STIs, regardless of circumcision status.

Focus group discussions

Two focus group discussions were held, one with older, one with younger men. While survey results showed a medium-level acceptability of male circumcision, focus groups did not reveal such high acceptance, older men feeling that it was not necessary to offer circumcision services in Hlabisa as 'people do not need circumcision' and that it was more important for 'a person to have one partner to prevent diseases'. While the younger men thought that circumcision should be available to those who wished to undergo the procedure, of eight men only two said they would be circumcised.

Among older men, the only reason given for choosing to circumcise was to give a woman more sexual pleasure; while the younger men cited protection from STIs, pain during sex and sexual satisfaction as reasons for circumcision.

In both discussions culture appeared to be a greater barrier than indicated in individual interviews; though once again fear of pain and death appeared to present a greater barrier, over half the younger men saying that they would not choose to be circumcised for this reason.

Service provider interviews

In discussions surrounding whether male circumcision should and could actually be promoted as an STI, including HIV, intervention the two traditional healers (interviewed together) agreed that circumcision could be good as long as it was for health, not cultural reasons. The STI clinic sister thought it would be good to promote male circumcision and that there would be little risk of circumcision increasing risk behaviours as people are so afraid of STIs and know that circumcised men can still carry these diseases. The hospital doctor, however, was concerned about the potential for increases in risk behaviours and the ability of the health care structure to cope with an increased demand on its services. While the sister did not believe either to pose a significant problem, both formal service providers stated that only doctors were able to carry out circumcision within the present health care system. Further, while the doctor felt that it could be good for nurses to be trained in the procedure, the sister noted that men would not allow themselves to be circumcised by nurses, who are generally female.

While the nurse and doctor did not see any problem with training traditional healers to circumcise safely, the healers themselves said that they would not perform circumcision. In addition, all service providers interviewed felt that few people would wish to be circumcised by healers, especially in relation to the negative press traditional circumcision practices in the Gauteng and Transkei had received over recent months. This is also reflected in interviewees' preferences to be circumcised by medical staff.

Both the doctor and sister revealed that circumcision was presently available at the hospital for the cost of a standard outpatient's visit (R15/ US$2) and that it is standard protocol for the option of circumcision to be discussed with men experiencing recurring STIs, the sister stating that her nurses recommended circumcision to at least 80% of males attending KwaMsane STI clinic. However, it is not known what percentage of males with whom circumcision is discussed actually take up the procedure. Further, it is not clear whether the health service would be able to cope with an increased demand on its services if male circumcision were to be actively promoted.

Discussion

Results of this study are consistent with other acceptability studies from sub-Saharan Africa (see Table III) suggesting that male circumcision may generally be more acceptable than believed prior to these studies.

Around half the uncircumcised men surveyed (51%) said that they would be circumcised if the procedure could be conducted safely with little pain and at low cost. Sixty-eight per cent of women said that they would like their primary partners to be circumcised. There may be a higher preference for male circumcision among the employed and those with higher educational levels. Men who did not have particular beliefs regarding health or sexual aspects of circumcision were least likely to be willing to be circumcised. This suggests that appropriate educational messages might further increase levels of acceptability in this community.

As in previous studies, the main reasons for favouring male circumcision were prevention of STIs, including HIV, and beliefs surrounding the likelihood of pain and/or enhanced pleasure during intercourse and circumcision status (Bailey et al., 2002; Halperin et al., 2002; Kebaabetswe et al., 2003; Lagarde et al., 2003; Nnko et al., 2001; Rain-Taljaard et al., 2003)

From a health promotion perspective, it is worth noting the differences between factors statistically associated with willingness to be circumcised, and the answer to the question: 'What are the main reasons you would/would not choose to be circumcised?' While more men stated protection from STIs, including HIV, than increased sexual pleasure as a reason

Table III. Attitudes towards male circumcision in other studies.

Country/population	% uncircumcised men would be circumcised	% women favouring circumcision	Authors, year
Mining township, South Africa (Xhosa, Zulu, Sotho, Tswana)	59		Taljaard et al., 2003
Luo, Kenya	56	65	Bailey et al., 2002
Botswana	68		Kebaabetswe et al., 2003
Harare, Zimbabwe	45		Halperin et al., 2002
Westonari, South Africa	>70	69	Lagarde et al., 2003

for circumcision, our data suggest that factors concerning beliefs about sexual pleasure may actually be more influential. It is possible that men stated protection from STIs as the primary motivator for circumcision more frequently than enhanced sexual pleasure believing that this is what the researchers wanted to hear or because they did not wish to admit to their primary motivation. Thus, a male circumcision promotion campaign within this study population might have more impact if it were to promote 'better sex' over 'safer sex'. However, while this strategy would build upon the beliefs of the population rather than 'health education', it could adversely affect sexual practice and the impact of other HIV prevention campaigns. Further, there is little consistent evidence regarding sexual function in circumcised versus uncircumcised men. In any event, education campaigns must emphasize that male circumcision cannot afford total protection from STIs and HIV, a minority of participants believing it could.

Our survey results and discussions with health providers suggest that, as found elsewhere in sub-Saharan Africa, circumcision decisions are becoming more a matter of individual and family preference than of cultural identity. Thus, culture might not be a significant barrier in the promotion of male circumcision (as supported by Taljaard et al.'s (2003) study, which found that 34% of migrant Zulu males in Carltonville were circumcised despite a lack of cultural prescription).

Further focus group discussions are needed to clarify the influence of group dynamics on circumcision preference and attain more valid results, since the results of the two focus groups appear to differ from survey findings. One explanation is that the level of sexual health knowledge appeared to be lower among men attending the focus group discussions than among most of the men interviewed. Alternatively, the results from FGDs might reflect the influence of peer pressure on opinions voiced or be simply due to chance. Further investigation is clearly needed.

While Bailey et al. (2002) have suggested that women's views might have a powerful influence on the circumcision decisions of men among the Luo of western Kenya, within Zulu culture this is unlikely to be true. A study of sexual decision-making and negotiation in KwaZulu-Natal found that communication among youth was poor and that young women appeared powerless to enforce their preferences in sexual situations, dynamics within sexual relationships being primarily guided by the preferences of male partners (Varga, 1998). Our study highlights this, women volunteering that while they may wish their partners to be circumcised, men would be unlikely to respond to their wishes. Thus the impact of women's preference for male circumcision may be limited. However, there may be some influence of women's views within health promotion targeting men, as believing that women enjoyed sex more with circumcised men than their uncircumcised counterparts was significantly associated with an increased willingness of men to be circumcised.

In this study we have focused on acceptability of male circumcision rather than feasibility. However, one identified barrier to the promotion of male circumcision in Hlabisa is that, theoretically, only hospital doctors can carry out the procedure. This raises problems of logistics and costs for the men, as well as the risk of diverting medical resources from other areas where they are needed. While it may prove cost-effective to promote male circumcision to reduce the burden of STIs and HIV in Hlabisa, the burden of reduced resources would fall upon nurses who are unable to perform circumcision and an increased burden would also fall upon already stretched hospital clinicians. Further, while around half the men said that they would choose to be circumcised, it is not known how many would actually take up the service if it were offered to them, making it difficult to estimate the

burden on the health system. Despite this, initial findings with regards to the feasibility of promoting male circumcision in rural KwaZulu-Natal are promising.

While the findings in our initial feasibility study are promising, we cannot ignore that the sample of health care providers was small and did not include surgeons who would be required to carry out male circumcision, or general practitioners with whom men might discuss issues such as male circumcision. Therefore we recommend that further studies into the feasibility of male circumcision in KwaZulu-Natal be carried out.

Our findings are particularly important within a context whereby although most people are aware of the protective effect of condoms, condom uptake remains worryingly low (Camlin & Chimbwete, 2003), emphasizing an urgent need for alternative strategies to help curb the HIV epidemic. Our data suggest that male circumcision might provide a useful HIV intervention within KwaZulu-Natal in the future, if the results of the RCTs indicate that such an intervention does reduce incidence of HIV infection in men. In the meantime, in KwaZulu-Natal further feasibility studies should be considered, so that if the time for circumcision promotion comes the health system will be ready.

Acknowledgements

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