

Prevalence and Acceptability of Male Circumcision among Young Men in South Africa

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ABSTRACT The objectives of this study were to determine the prevalence and acceptability of male circumcision among young men in four of nine provinces in South Africa. As part of a cross-sectional population-based household survey, 1619 men aged 18-24 completed confidential interviews. The results indicate an overall prevalence of self-reported male circumcision of 39.1% (15.3% traditional and 23.8% medical male circumcision). In the multivariate analysis, being HIV negative and having extensive social network resources were associated with male circumcision status, and knowledge of the protective effect of male circumcision against HIV, partner risk-reduction self-efficacy, extensive social network resources and having had an early sexual debut were associated with the acceptability of male circumcision. Male circumcision is common, and the acceptability is high. Factors associated with the acceptability of male circumcision can be used to scale-up the demand for medical male circumcision services.

INTRODUCTION

Three clinical trials as well as several observational studies conducted over the past two decades or so have conclusively shown that male circumcision is partially protective against HIV acquisition in heterosexual men (WHO 2007a, 2007b; Bailey et al. 2001; Siegfried et al. 2003). Consequently, under the global leadership of both WHO and UNAIDS, international organisations have recommended the scaling-up of male circumcision in sub-Saharan African countries, including South Africa, as part of a comprehensive HIV prevention package among males. In 2002, the Nelson Mandela/HSRC study showed that approximately 35% of men in South Africa were circumcised (Connolly et al. 2008). Circumcision rates among Africans were the highest in the northern part of South Africa, where the population speaks isiNdebele (67%), Northern Sotho (71%), Tshivenda (90%) and Xitsonga (53%), and in the southeastern region, where the population speaks isiXhosa (64%). Jewish and Muslim South Africans were also highly likely to be circumcised (79%) (Connolly et al. 2008). Among rural youth (18-24 years) in Uganda, 35% reported having been circumcised (Wilcken et al. 2010).

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Questions have been asked about the acceptability of introducing circumcision as an HIV prevention strategy in sub-Saharan Africa including South Africa. In a review of 13 studies from nine countries (South Africa, Kenya, Swaziland, Botswana, Malawi, Tanzania, Uganda, Zambia), it was found that the mean proportion of uncircumcised men who would consider circumcision was 65% and 51% in rural populations (Scott et al. 2005; Westercamp and Bailey 2007). Studies performed more recently found different acceptability rates among different adult populations: 29% in the Dominican Republic (Brito et al. 2009), 44.6% among Chinese men (Yang et al. 2012), 50.2% among Rwandese men (Gasasira et al. 2012) and 52% among men in Zimbabwe (Mavhu et al. 2011). Various factors were identified in different studies to be associated with the acceptability of male circumcision, including socio-demographics (locality, nationality, age, education) (Brito et al. 2009; Gasasira et al. 2012; Westercamp et al. 2012; Yang et al. 2012), knowledge about male circumcision (Brito et al. 2009; Mavhu et al. 2011; Westercamp et al. 2012), not believing that circumcision decreases sexual pleasure (Brito et al. 2009), perceived improvement in sexual pleasure (Westercamp et al. 2012), and peer behaviour (having a friend who underwent circumcision) (Yang et al. 2012).

Male circumcision-based HIV prevention programmes target young men (18-24 years) in particular, but little is known about the prevalence and acceptability of male circumcision

among young men in South Africa (Andersson and Cockcroft 2012). Therefore, the objectives of the current study were to determine the rate and acceptability of male circumcision among young South African men. This research was conducted as part of an evaluation of the impact of loveLife, South Africa's national HIV prevention campaign for young people, on HIV and related risk behaviours.

METHODOLOGY

Sample and Procedure

A cross-sectional population-based household survey was conducted using a multi-stage stratified cluster sampling approach. In each household, all eligible household members were invited to participate and were interviewed. The survey included persons between the ages of 18 and 24 years living in South African households in the four selected provinces, KwaZulu-Natal, Mpumalanga, Eastern Cape and Gauteng. A total of 289 census enumeration areas¹ (EAs) from the 2001 population census were selected from a database of 86 000 EAs and were mapped in 2007 using aerial photography to create a new updated master sample to use as a basis for sampling households. The selection of EAs was stratified by province and locality type. Locality types were urban formal, urban informal, rural formal (including commercial farms), and rural informal. In the formal urban areas, the population group type was used as a third stratification variable (based on the predominant population group in the selected EA at the time of the 2001 census). The allocation of EAs to different stratification categories was disproportionate; that is, over-sampling or over-allocation of EAs occurred in areas that were dominated by Indian, Coloured or White population groups to ensure that the minimum required sample sizes for these smaller population groups were obtained. A similar approach was used in the sampling of loveLife sites. The selected in all 583 EAs informed the primary sampling units (PSUs). Visiting points (VPs) or households were used as secondary sampling units (SSUs). Within each household, all eligible individuals (including consenting and non-consenting individuals) aged 18 to 24 years selected for the survey were the ultimate sampling unit (USU). To obtain an approximately self-

weighted sample of visiting points (that is, SSUs), the EAs were sampled with probability proportional to the size of the EA using the 2001 census estimate of the number of visiting points in the EA database as a measure of size (MOS). A random sample of 12 VPs was selected from each of the 583 EAs using a systematic sampling approach. A visiting point was defined as a location with an address that might have one or more than one household. A household was defined as a group of people living and eating together from the same pot. If multiple households existed at a visiting point, a Kish grid was used to randomly select a responding household, and all members of the selected household were eligible to participate.

The questionnaires used in the survey component of the main study were developed using content and technical experts. The questionnaire was available in nine languages (English, Afrikaans, Zulu, Sotho, Xhosa, Northern Sotho, Tswana, Venda, Tsonga). Fieldworkers were trained to conduct the survey component of the study. The fieldworkers were appropriately matched with the predominant ethnic group from which the participants were recruited. This matching is especially important in rural areas.

Ethical approval for the study was obtained from the HSRC Research Ethics Committee. Participants signed informed consent forms. The informed consent forms covered the participant's right to participate and/or refuse if they chose to.

Measure

The prevalence of male circumcision was assessed with the question "Have you been circumcised?" The type of circumcision was assessed with two questions: 1) Was your circumcision performed traditionally, in the mountains, in the bush, or in an initiation school? and 2) Was your circumcision performed medically, in a hospital, or in medical office?" Other questions included the age at which the male circumcision procedure was performed. Men were asked about the HIV protective effect of male circumcision with two questions: "Should men who are circumcised still wear condoms?" and "Can men who are circumcised still infect their sex partners with HIV?" Cronbach's alpha for this male circumcision knowledge index was 0.71 in this sample. If the interviewee responded to

one or two of the knowledge questions incorrectly, the response was coded as 0, and if the interviewee answered both questions correctly, the response was coded as 1.

Men were also asked about the acceptability of male circumcision with the question "Do you think men should be circumcised to decrease chances of being infected with HIV?"

HIV and STI Status. The HIV and STI statuses were assessed based on the self-reported lifetime incidence of sexually transmitted infections (STIs) and the self-reported HIV status.

HIV Knowledge was assessed with two items: 1) How many people living with HIV do you personally know? and 2) How many people have you personally known (in your lifetime) that have died from AIDS? The responses to these two questions were summed and coded as 0 if the interviewee did not know anyone in either category, 1 if the interviewee knew at least one person living with HIV (PLHIV) or who has died from AIDS, and 2 if the interviewee knew at least one PLHIV and at least one person who has died from AIDS. The wording of these questions latter seems ambiguous. Clarify. Cronbach's alpha for this 2-item HIV knowledge index was 0.73 in this sample.

HIV Risk Perception was assessed with 1 item: "What do you think your chances of getting HIV are?" The response options ranged from 1="no risk at all" to 4="great" and 5="I already know that I am HIV positive".

Self-esteem was assessed with the 10-item Rosenberg self-esteem scale (Rosenberg 1965), with a score of 14 or less indicating low-self-esteem. A sample item is "All in all, I am inclined to feel that I am a failure." The response options ranged from 0=strongly disagree to 3=strongly agree. Cronbach's alpha for the Rosenberg self-esteem scale was 0.64 in this sample.

Religious Involvement was assessed with 1 item: "How important is attending religious gatherings in your life?" The response options ranged from 1=not important to 3=very important.

Partner Risk Reduction Self-efficacy was assessed with 4 items, such as "Would you be able to avoid sex any time you didn't want it?" The response options were No, Most likely no, Most likely yes, and Yes. Cronbach's alpha for this partner risk reduction self-efficacy index was 0.73 in this sample.

Social Network Resources were assessed with 2 items, including "I have a strong network of family that support me" and a strong network of friends. The response options ranged from 1=strongly agree to 4=strongly disagree. Limited social network resources were coded as 2-5, moderate as 6-7 and extensive as 8. Cronbach's alpha for this social network index was 0.45 in this sample.

Peer Pressure was assessed with two items: 1) "How much pressure do you get from your friends to have sexual intercourse, would you say...?" (the response options ranged from 1="No pressure at all" to 4="A lot of pressure") and 2) "I feel pressure from friends to do things I don't want to" (the response options ranged from 1="Very often" to 4="Never"). Low peer pressure was coded as 2, medium as 3-5 and high as 6-8. Cronbach's alpha for this peer pressure index was 0.61 in this sample.

Sexual Permissive Attitudes were assessed with 10 items, for example, "It is acceptable for somebody to have sex before they are 18 years." The response options were 1=agree or 2=disagree. Sexual permissive attitudes were coded as follows: low, 0; medium, 1-2; and high, 3-10. Cronbach's alpha for this sexual attitude index was 0.61 in this sample.

Poverty was assessed with 6 items regarding the availability or non-availability of shelter, fuel or electricity, clean water, medicines or medical treatment, and food and on the cash income in the past week. The response options ranged from 1="Not one day" to 4="Every day of the week." Poverty was defined as higher scores for the non-availability of essential items. Cronbach's alpha for this poverty index was 0.70 in this sample.

Risk Behaviour. Various questions were asked to assess risk behaviours. These questions covered the number of lifetime sexual partners, having had two or more sexual partners in the past year, inconsistent (not always) condom use with the last non-regular sexual partner, early sexual debut (age less than 15 years), the frequency of sexual intercourse and the length of the last relationship.

HIV Prevention Programme Exposure was assessed with the following items. Multi-media exposure was assessed with 10 items, for example, "Have you ever watched Soul City on television?", "Watched a loveLife television show", "Listened to Soul City on the radio", and

"Read UNCUT (loveLife) youth magazine." The response options were 1=Yes or 2=No. The scores for the 10 multi-media programmes were summed and coded as 1=0-4 media exposures, 2=5-7 media exposures, and 3=8-10 media exposures.

Data Analysis

Data analysis consisted of both descriptive and inferential statistics. After the data sets were edited, programs were written to calculate the sample weights. Weighted data were analysed using STATA software, taking into account the complex multi-level sampling design. STATA software (svy methods) was used to obtain the estimates of key indicators, significance values (p-values) and confidence intervals (95% CI) that take into account the complex design and individual sample weights. Computed estimates and odds ratios are reported with 95% confidence intervals, and a two-sided p-value of 0.05 used as the cut-off point for statistical significance. In this analysis, the sample was restricted to men. Associations between the two key outcomes of prevalence and acceptability of male circumcision and individual, social and structural variables and prevention programme exposure were evaluated by calculating odds ratios (ORs). Multivariate unconditional logistic regression was used to evaluate the impact of explanatory variables for the key outcomes, prevalence and acceptability of male circumcision (binary dependent variables). All variables that were statistically significant at the $p < .05$ level in the bivariate analyses were included in the multivariate models.

RESULTS

Survey Response Rate

A total of 5 768 households were sampled and approached for interviews. Some of these households were vacant, were invalid or had been destroyed and thus were not eligible for the survey. Only 94.8% households were valid, and among the valid households, 93.6% agreed to be interviewed. Only households that indicated that they had a member aged 18 to 24 years were eligible for individual questionnaire administration. Of the eligible and valid households, 47.2% were eligible for an individual

interview, 1.3% refused the individual interview, and 2.3% were excluded because the target individuals were absent from the household. Thus, the individual interview response rate was 96.4%.

Sample Characteristics

The total sample of young people in the study was 3123 (1619 men). The subjects were aged 18-24 and resided in four of the nine provinces (Eastern Cape, Gauteng, KwaZulu-Natal and Mpumalanga) in South Africa. Almost all male participants were Black African (97.5%) by population group. Various individual factors were assessed. Among those who had been tested for HIV and indicated their test result, 5.8% were HIV positive, and 5.3% had been diagnosed with a sexually transmitted infection (STI) in their lifetime. A high number of the participants (96.1%) had male circumcision protection knowledge, and the acceptability of male circumcision was 84.1%. Individual HIV risk perception was moderate (42%) amongst the participants, and over half of the participants knew a person living with HIV or a person who had died from AIDS (53.8%). Only a few of the participants had low self-esteem (5.2%); the partner risk reduction self-efficacy was high, with a mean of 16 on a scale from 4 to 16; and most participants (82.5%) indicated that it is very important to attend religious gatherings. More than one-third (36.7%) indicated that they had extensive social network resources, 37.4% had high sexually permissive attitudes, and 57.1% felt medium or high pressure from their peers. In terms of the structural factors, the poverty index amongst participants was low, with a mean of 8.3 on a scale from 6 to 24. Of the participants, 62.1% had Grade 12 or more education, and 50.3% were current students. With regard to HIV/STI risk behaviours, 18% of the participants reported an early sexual debut at an age less than 15 years. The duration of most participants' (87.3%) last sexual relationship was four or more months. Almost one-third of participants (29%) indicated that they had two or more sexual partners in the past year, and 25.8% reported inconsistent condom use with their last irregular sexual partner. The majority (78.1%) had been exposed to 5 or more HIV prevention media programmes (see Table 1).

Table 1: Individual, social, and structural characteristics; HIV/STI risk behaviours; and multi-media prevention programme exposure of the study sample (N=1619)

<i>Characteristics</i>	<i>N (%) or M (SD)</i>
Individual	
Diagnosed as HIV positive	40 (5.8)
Diagnosed with an STI in during the lifetime	128 (5.3)
Knowledge of the protective effect of male circumcision against HIV	1469 (96.1)
HIV protection knowledge	
Male circumcision acceptability	1291 (84.1)
HIV Risk Perception	
Low	598 (38.9)
Medium	657 (41.7)
High	322 (19.4)
Knows Person Living with HIV and/or Who Has Died from AIDS	
0	664 (46.2)
1=knows a PLHIV or a person who died from AIDS	339 (21.2)
2=knows a PLHIV and a person who died from AIDS	575 (32.6)
Low self-esteem	91 (5.2)
Partner risk reduction self-efficacy (range 4-16)	14.0 (2.4)
Religious involvement	1154 (82.8)
Social	
Social Network Resources	
Low Limited	156 (8.1)
Medium Moderate	840 (55.5)
High Extensive	527 (36.4)
Sexual Permissive Attitudes	
Low	357 (22.5)
Medium	586 (40.0)
High	600 (37.4)
Peer Pressure	
Low	558 (43.0)
Medium	744 (44.4)
High	247 (12.7)
Structural	
Poverty index (range 6-24)	8.3 (3.0)
Education	
Low ($\leq$ Grade 7)	59 (3.5)
Medium (Grade 8-11)	643 (34.4)
High (Grade 12 or more)	890 (62.1)
Employment Status	
Student	772 (50.3)
Employed	237 (16.1)
Unemployed	471 (33.5)
HIV/STI Risk Behaviours	
Early sexual debut (<15 years)	145 (17.8)
Last sexual relationship 4 or more months (vs. less monthstime)	811 (87.3)
Two or more sexual partners in the past year	525 (28.9)
Inconsistent condom use with the last irregular sexual partner	169 (25.8)
HIV Prevention Programme Exposure	
Multimedia Programme Exposure	
0-4	370 (22.8)
5-7	658 (43.6)
8-10	503 (33.7)

Prevalence of Male Circumcision

The overall prevalence of self-reported male circumcision in this sample was 39.1%, includ-

ing 15.3% traditional male circumcision and 23.7% medical male circumcision. The prevalence of male circumcision in ethnic groups (Ndebele, Xhosa, Southern Sotho, Northern Sotho, Venda) with high prevalence rates (more than 50%) was 71.3%, with 44.6% having undergone traditional circumcision and 26.7% having undergone medical circumcision. The male circumcision prevalence in ethnic groups with low male circumcision prevalence rates (less than 50%) was 32.0%, with 9% having undergone traditional circumcision and 23.2% having undergone medical circumcision. The language usage in the previous sentence is incoherent. Revise and clarify. Regarding the age of circumcision, the predominant age group for both traditional and medical circumcision was 12 to 17 years (52.0 and 67.7%, respectively) (see Table 2).

Associations with Male Circumcision Status and Acceptability of Male Circumcision

In the univariate analyses, being HIV negative, knowing a person living with HIV and/or a person who died from AIDS, high self-esteem, low religious involvement, moderate social network resources, high sexually permissive attitudes, being employed, the last sexual relationship lasting four or more months and high multimedia programme exposure were associated with male circumcision status. In the multivariate unconditional regression analysis, being HIV negative and extensive social network resources remained significantly associated with male circumcision status. Regarding the acceptability of male circumcision, in the univariate analyses, knowledge of the protective effect of male circumcision against HIV, partner risk-reduction self-efficacy, extensive social network resources, being circumcised and having had an early sexual debut were associated with the acceptability of male circumcision. In the multivariate unconditional regression analysis, knowledge of the protective effect of male circumcision against HIV, partner risk-reduction self-efficacy, extensive social network resources and having had an early sexual debut were associated with the acceptability of male circumcision (see Table 3).

DISCUSSION

This study found a male circumcision prevalence of 39.1% among a large sample of young men (18-24 years) in 2011 in South Africa. The

Table 2: Male (traditional and medical) circumcision by ethnic group and age group (N=1619)

<i>Demographics</i> <i>Age</i>	<i>Male circumcision</i>		<i>Traditional male circumcision</i>				<i>Medical male circumcision</i>			
			<i>All</i>	<i>0-11</i>	<i>12-17</i>	<i>18+</i>	<i>All</i>	<i>2-11</i>	<i>12-17</i>	<i>18+</i>
	<i>N</i>	<i>%</i>	<i>%</i>	<i>%</i>	<i>%</i>	<i>%</i>	<i>%</i>	<i>%</i>	<i>%</i>	<i>%</i>
All	741	39.1	15.3	12.6	52.0	35.4	23.8	20.4	67.7	11.9
High MC ethnic groups (Ndebele, Xhosa, Southern/Northern Sotho, Venda)	384	71.3	44.6	3.6	36.0	60.4	26.7	31.2	61.6	7.3
Low MC ethnic groups (Swati, Zulu, Tswana, Tsonga, Afrikaans, English)	344	32.2	9.0	22.4	69.8	7.8	23.2	17.8	69.0	13.5

South African Second National HIV Communication Survey of 2009 found a similar male circumcision prevalence of 42% among men 16-55 years old (Johnson et al. 2010). These data seem to indicate a slight increase in the prevalence of male circumcision from the older 2002 Nelson Mandela/HSRC study, which showed that 35% of men in South Africa were circumcised (Connolly et al. 2008). A rate of 35% male circumcision was also found among male youth (14-24 years) in rural Uganda (Wilcken et al. 2010). Further, this study found that a higher proportion of the young men had undergone medical circumcision than traditional circumcision. In a previous survey of adult South Africans conducted in 2005, the proportion of traditional circumcision was higher than the proportion of medical circumcisions (Peltzer 2009). Therefore, the findings of this study may indicate that among young South African men, there is a tendency to undergo medical rather than traditional male circumcision. The predominant age group for both traditional and medical circumcision was between 12 to 17 years in this study, whereas in a previous study, the predominant age group for medical circumcision was 0 to 11 years and that for traditional circumcision was 18 years and older (Peltzer 2009). These data indicate that traditional male circumcision seems to be performed earlier (during adolescence) than in the past and that medical circumcision is performed later (also during adolescence) than in the past, when the procedure was usually conducted in the preadolescent period. HIV-negative status and extensive social network resources were found to be associated with male circumcision status in this study. This finding seems to confirm that male circumcision is partially protective against HIV acquisition in heterosexual men (WHO 2007a, 2007b; Bailey et al. 2001; Siegfried et al. 2003) and that peer and other social network resources may influence the acceptance of male circumcision.

The study found a high acceptability of male circumcision, as found in previous studies in sub-Saharan Africa (Gasasira et al. 2012; Mavhu et al. 2011; Westercamp and Bailey 2007). In agreement with other studies (Brito et al. 2009; Mavhu et al. 2011; Westercamp et al. 2012), this study found that better knowledge about male circumcision was positively associated with the acceptability of male circumcision. The finding that better male circumcision knowledge increases the acceptability of male circumcision can be utilised in male circumcision-based HIV prevention programmes. The finding that a larger social network or perhaps peer behaviour increases the acceptability of male circumcision was also found among Chinese men (Yang et al. 2012). Social networks play an important role in influencing decisions made by youth and thus should be considered when developing interventions to increase the acceptability of male circumcision.

Multi-media HIV prevention exposure was not found to be associated with male circumcision status or acceptability. It is possible that the media studied had not specifically included HIV prevention messages regarding male circumcision prior to or at the time of the study, resulting in no detectable effect.

The study limitations included the self-reporting of the male circumcision status. Although the sample included in the study is not a national probability sample, it does include a representative sample of youth (18-24 years) in four of nine provinces in South Africa. The reported STI and HIV prevalences are only a rough indication and are likely to be higher (a number of youth in the study had never been tested, and it is thus likely that positive status was under-reported); furthermore, a reported negative status is not necessarily correct because it is not always based on recent testing. Because this survey was cross-sectional, no conclusions regarding causality can be drawn.

Table 3: Determinants of the prevalence and acceptability of male circumcision

	<i>Male circumcision</i>		<i>Acceptability of male circumcision</i>	
	<i>OR (95% CI)</i>	<i>AOR (95% CI)</i>	<i>OR (95% CI)</i>	<i>AOR (95% CI)</i>
Individual				
MC knowledge	1.23 (0.51- 3.00)	-	9.91 (4.31-22.74)***	7.81 (3.01-20.27)***
HIV positive vs. negative	0.24 (0.09- 0.64)**	0.09 (0.01-0.73)*	1.32 (0.25- 6.86)	-
Lifetime history of STIs	1.25 (0.64- 2.44)	-	1.10 (0.39- 3.10)	-
HIV Risk Perception				
Low	1.00	-	1.00	-
Small/Medium	1.72 (1.15- 2.59)		1.48 (0.72- 3.04)	
High/already HIV-positive	1.09 (0.57- 2.09)		1.52 (0.75- 3.07)	
Knows a Person Living with HIV and/or Who Has Died from AIDS				
0	1.00	1.00	1.00	-
1=knows a PLHIV or a person who died from AIDS	2.81 (1.11- 7.08)*	2.63 (0.92- 7.49)	1.26 (0.61- 2.67)	
2=knows a PLHIV and a person who died from AIDS	2.49 (1.46- 4.24)***	0.86 (0.40- 1.88)	1.65 (0.70- 3.93)	
Low self-esteem	0.36 (0.16- 0.83)*	1.05 (0.27- 4.13)	0.41 (0.16- 1.06)	-
Partner risk reduction self-efficacy	0.93 (0.82- 1.05)	-	1.15 (1.04- 1.28)**	1.13 (1.01- 1.26)*
Religious involvement	0.61 (0.39- 0.95)*	0.55 (0.24- 1.23)	1.55 (0.84- 2.86)	-
Social				
Social Network Resources				
Low Limited	1.00	1.00	1.00	1.00
Medium Moderate	2.43 (1.04- 5.71)*	3.39 (0.62-18.32)	2.33 (1.12- 4.86)*	2.52 (1.17- 5.43)*
High Extensive	2.20 (0.87- 5.57)	5.39 (1.03-28.210)*	4.03 (1.55-10.480)**	3.24 (1.19- 8.81)*
Sexual Permissive Attitudes				
Low	1.00	1.00	1.00	-
Medium	1.19 (0.80- 1.77)	1.68 (0.47- 5.99)	1.55 (0.66- 3.68)	
High	1.86 (1.14- 3.05)*	2.20 (0.64- 7.50)	1.77 (0.81- 3.85)	
Peer Pressure				
Low	1.00	-	1.00	-
Medium	1.19 (0.73- 1.95)		1.21 (0.49- 2.99)	
High	2.57 (0.95- 6.94)		1.71 (0.62- 4.39)	
Structural				
Poverty index	1.05 (0.94- 1.18)	-	1.01 (0.92- 1.11)	-
Education	1.17 (0.98- 1.41)	-	1.05 (0.85- 1.29)	-
Employment Status				
Student	1.00	1.00	1.00	-
Employed	1.65 (1.07- 2.55)*	2.24 (0.85- 5.90)	1.57 (0.85- 2.89)	
Unemployed	1.06 (0.63- 1.98)	0.66 (0.31- 1.39)	1.07 (0.58- 1.99)	
HIV/STI Risk Behaviours				
Circumcised	-		1.88 (1.22- 2.89)**	1.79 (0.94- 3.40)
Early sexual debut (<15 years)	1.62 (0.96- 2.75)	-	3.84 (1.48- 9.96)**	2.94 (1.36- 6.31)**
Last sexual relationship 4 or more months (vs. less months time)	5.05 (1.60-15.91)**	1.83 (0.54- 6.21)	0.44 (0.17- 1.14)	-
Two or more sexual partners in the past year	1.69 (1.16- 2.45)**	1.90 (0.90- 3.99)	1.33 (0.70- 2.56)	-
Inconsistent condom use	0.66 (0.32- 1.34)	-	0.91 (0.28- 3.02)	-
HIV Prevention Programme Exposure				
Multi-media exposure				
0-4	1.00	1.00	1.00	-
5-7	1.12 (0.59- 2.13)	0.87 (0.31- 2.46)	0.77 (0.40- 1.49)	
8-10	3.02 (1.61- 5.64)***	2.16 (0.69- 6.77)	1.68 (0.72- 3.93)	

***P<.001; **P<.01; *P<.05

CONCLUSION

The study found high rates and high acceptability of male circumcision. The finding that

knowledge of the protective effect of male circumcision against HIV was associated with the acceptability of male circumcision can be used to increase awareness of the benefits of male

circumcision for HIV prevention. Young people should continue to be the focus of programmes that aim to scale-up the demand for medical male circumcision services.

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