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Acceptability of Male Circumcision Among Adolescent Boys and their Parents, Botswana

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Abstract

Little is known of the acceptability of male circumcision (MC) to adolescent boys, a key target group for HIV prevention. We conducted a cluster design survey among adolescent boys and their parents/guardians in two villages in Botswana. Of 1300 households visited, 398 boys were eligible; 269 boys and 210 parents/guardians participated. MC was described correctly by 80% of boys, and 76% identified that MC reduces the risk of male HIV acquisition. After a brief informational session, 75% of boys stated that they would definitely want to be circumcised and 96% of parents/guardians would want their boy circumcised. Boys most frequently reported pain (49%) and possible health problems (19%) as concerns undergoing MC; concerns about peer or partner acceptance, sexual function, or cultural appropriateness were uncommon. Adolescent MC is likely to be highly acceptable in Botswana if done safely, for free and with adequate pain control in a hospital setting.

Keywords

HIV/AIDS prevention; Male circumcision; Acceptability; Adolescent boys; Botswana

Background

Human immunodeficiency virus type I (HIV-1) infects 25% of adults in Botswana [1] and similar proportions in other heavily affected countries in southern Africa [2]. Epidemiologic studies link high prevalence of HIV-1 infection to low population rates of male circumcision [3–6], as seen in Botswana where only approximately 11% of males are circumcised [7]. In 2007, after three randomized trials of male circumcision in sub-Saharan Africa demonstrated a 50–75% reduction in the risk of HIV acquisition among circumcised heterosexual men [8–10], the World Health Organization recommended the roll-out of male circumcision services in countries with high rates of HIV infection and low rates of male circumcision [11]. In

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response, Botswana has launched a national male circumcision campaign as part of its HIV prevention efforts [12].

Previous studies have found male circumcision to be acceptable (by self-report) to adults in various countries in sub-Saharan Africa [13, 14] and in the Caribbean [15]. Traditional male circumcision was historically practiced during adolescence in Botswana, but was largely abandoned in the 19th and 20th centuries. A recent study of neonatal male circumcision in Botswana showed a high rate of self-reported acceptability among mothers of newborn boys [16]. However, adolescents have different prioritization of social concerns, long-term risks, and other factors during adolescence [17], and the acceptability of male circumcision in this age group is unknown. Circumcision during adolescence, when HIV prevalence is still low, is predicted to prevent more HIV infection [18, 19] and to be more cost effective [20] than circumcision of older age groups (2% of adolescent boys in Botswana are HIV-infected, compared with 24% of adult men [7]).

Our primary aim was to assess knowledge regarding and acceptability of male circumcision among adolescent boys and their parents and guardians in two large villages in southeast Botswana. These villages were chosen as representative of communities in Botswana that historically did (Mochudi) and did not (Molepolole) perform traditional male circumcision.

Methods

The study participants included adolescent boys 13 to 18 years of age, and their parents/guardians, living in Molepolole and Mochudi. Written informed assent was obtained from willing male adolescent boys, and written informed permission was obtained from parents/guardians of adolescent volunteers. One willing parent or guardian was interviewed in each household in which at least one adolescent boy participated, and separate written informed consent was also obtained for parental/guardian participation. The ethical review boards of the Botswana Ministry of Health and the Harvard School of Public Health approved the study.

Sampling Design

Adolescent boys and their parents/guardians in the villages of Molepolole and Mochudi were sampled using a one-stage cluster design. Recent village census or household maps were not available, so we adapted published methodologies [21–23] to approximate population-proportionate sampling. Using 2005 satellite photos (Google Earth 5.1, Mountain View, California, USA), the villages of Molepolole and Mochudi were each divided into 16 non-overlapping, square sections, with each square containing approximately the same number of household compounds. Clusters of 40 contiguous households or compounds were delineated around a randomly selected point within each square prior to visiting the cluster. All households within each cluster were visited (including structures within the cluster that were not present on satellite photos); only demolished or abandoned buildings were excluded. All eligible boys in each household (and one parent or guardian per household in which at least one boy was enrolled) were asked to participate. Interviewers proceeded consecutively from one household to an adjacent household within each pre-selected cluster. In the event that no one was home, households were visited up to three times.

Participant Interviews

Seven trained interviewers administered structured questionnaires before and after a standardized informational session. The two-minute informational session outlined the risks and benefits of male circumcision. All interviews were conducted in the local language,

Setswana. Adolescents and their parents/guardians participated in interviews and informational sessions separately, in private.

Measurement Tools

Structured data collection tools included questions on demographics, accuracy of participant knowledge regarding the nature of the MC procedure, the respondent's MC status (if male), knowledge regarding the relationship between MC and HIV acquisition in men, attitudes toward being (or having one's son/ward) circumcised, and reasons for wanting or not wanting circumcision. The majority of questions were closed-ended (providing a finite list of the most likely responses), but also included the option for open-ended "other" responses. While focus groups were not conducted among adolescent boys as part of this study, the questions and response options used were based in part upon the prior experience of co-authors with MC-related focus groups among adult men in Botswana (preceding an earlier similar survey among adults [14]), and with input from Botswana behavioral scientists and health professionals.

Surveys were administered in two parts. Part 1 addressed potential knowledge of MC, its acceptability and potential predictors thereof, and participant preferences and reasons for wanting or not wanting MC prior to the informational session. Part 2 re-addressed the primary issues related to the acceptability of MC following provision of a brief, structured informational session on the risks and benefits thereof.

Data Analysis

The primary outcomes of interest among boys and their parents/guardians were a) correct vs. incorrect knowledge regarding the effect of MC on risk of HIV acquisition— i.e., responding correctly that MC reduces but does not eliminate the risk of male HIV acquisition through heterosexual sex, vs. all other responses (the other potential responses were: There is no effect; It increases the risks of becoming infected with HIV; It makes it impossible for a man to become infected with HIV; and I am not sure.), and b) the acceptability of MC (both before and after the informational session), with acceptability defined as responding "I would definitely want (him) to be circumcised", and all other responses indicating non-acceptability (the other potential responses were as follows: Maybe I would want (him) to be circumcised; Maybe I would not want (him) to be circumcised; I would definitely not want (him) to be circumcised; and I am not sure). Study participants were asked to select a response after hearing all options. Both uncircumcised and circumcised boys participated in the survey. However, the specific questions (and hence analyses) regarding the acceptability of MC were restricted to uncircumcised boys. Reasons for wanting (or not wanting) MC were described.

Factors possibly associated with acceptability, correct knowledge of the procedure, and its benefits were compared between villages using the Wilcoxon rank sum test for continuous variables and the chi-square test for categorical variables. Responses before and after the informational session were compared with McNemar's test. Analyses included adjustment for the study design with grouping at level of both cluster and household (the latter for households with more than one participating adolescent). We evaluated predictors of adolescent acceptability of circumcision using multivariate logistic regression with variances adjusted for the study design using the Taylor expansion method. The final model was selected through backwards elimination of non-significant predictors ($P > 0.1$). Predictors included were adolescent village, age, educational level, knowledge of MC, religion, expressed concerns regarding MC and knowledge of health benefits of MC, knowledge of health benefits of MC, perception of community opinion regarding MC, and their parent/

guardian's acceptability of adolescent MC. All analyses were performed with the use of the SAS statistical package, version 9.2 (SAS Institute, Cary, North Carolina, USA).

Results

Enrollment and Demographics

Between June 1 and August 31, 2009, 1300 households were visited in 32 clusters (16 in Mochudi, 16 in Molepolole). A total of 398 eligible boys (191 in Mochudi and 207 in Molepolole) were identified from 305 households (151 in Mochudi and 154 in Molepolole), and 269 (68%) participated: 146 (76%) in Mochudi and 123 (59%) in Molepolole. A hundred and twenty-nine eligible boys (45 from Mochudi and 84 from Molepolole) accounted for the remaining 32% that did not participate in the study. In total, 108 of the eligible boys were unavailable after visiting their household up to three times; 9 boys declined participation; and 12 parents/guardians did not give permission.

The 269 participating adolescent boys were successfully enrolled from 218 households, with 94 of them from 43 households with multiple adolescent participants. Two hundred and ten parents/guardians participated: 117 parents (97 mothers and 20 fathers) and 93 guardians (73 women and 20 men); for 40 of these parents/guardians, more than one corresponding adolescent enrolled (yielding a total of 238 adolescent-parent/guardian pairs). For 31 participating boys, no parents/guardian wished to be interviewed. For 20 participating parents/guardians, their adolescent boy was either unwilling or unable to be interviewed.

The median age of adolescent participants was 15 years, and age distribution did not differ significantly between villages (Table 1). Adolescents differed between villages in their ethnic background (88% *Bakgatla* in Mochudi versus 93% *Bakwena* in Molepolole) and religion. No participants reported being Muslim. Only 19 (7%) boys were already circumcised per self-report, 10% in Mochudi and 3% in Molepolole ($\chi^2 = 5.93$, $P = 0.052$), with most reporting being circumcised as an infant. Of responding male parents/guardians, 14 (41%) reported being circumcised (46% of men from Mochudi, 30% of men from Molepolole).

Knowledge of Male Circumcision

Prior to the informational session, 194 (80%) adolescent boys correctly described male circumcision (83% of boys in Molepolole vs. 77% of boys in Mochudi, Rao-Scott $\chi^2 = 1.24$, $P = 0.266$). Older boys (age 15–18 years) were more likely to describe MC correctly (87%), than younger boys (68%, Rao-Scott $\chi^2 = 13.4$, $P < 0.001$). Among adolescent participants, 205 (76%) correctly reported that male circumcision reduces, but does not eliminate, the risk of HIV acquisition through sex. Mochudi boys correctly identified this fact less frequently than boys in Molepolole—66% and 89% respectively (Rao-Scott $\chi^2 = 23.8$, $P < 0.001$). Only 3 boys (1%) thought that male circumcision makes it impossible for a man to become infected with HIV and 11 boys (4%) thought that male circumcision increases the risk of male HIV acquisition.

High proportions of parents/guardians correctly described male circumcision and knew of its benefits in preventing HIV infection. Prior to the informational session, 181 (87%) of the adolescents' parents/guardians correctly identified that male circumcision reduces (but does not eliminate) the risk of men contracting HIV through sex. The proportion of parents/guardians responding correctly to this question did not differ significantly between the villages (85% in Molepolole versus 88% in Mochudi, Rao-Scott $\chi^2 = 0.318$, $P = 0.573$). Concordance of knowledge regarding the HIV prevention benefits among 237 responding adolescent-parent/guardian pairs was as follows: both members of 160 pairs answered

correctly while in 14 pairs both parties answered incorrectly. In 20 pairs, the parent/guardian answered correctly, while the adolescent answered incorrectly; and in 43 pairs, the converse was true.

Acceptability of Male Circumcision

Before the informational session, 167 (67%; 95% CI 61–72%) of the 250 uncircumcised boys reported that they would “definitely want” to be circumcised if male circumcision were available free of charge and performed safely. An additional 4% of boys indicated that “maybe” they would want to be circumcised. However, 45 (18%) uncircumcised boys stated “I would definitely not want to be circumcised”, and 25 (10%) were not sure. After the informational session (Figure 1A), the acceptability of male circumcision increased to 75% (95% CI 70–80%) and the proportion of boys stating “I would definitely not want to be circumcised” fell to 10% (McNemar exact’s statistic 12.5, $P < 0.001$, and McNemar’s exact statistic 15.7, $P < 0.001$ for the pre-post comparisons, respectively).

Among 210 parents/guardians, 192 (91%, 95% CI 88–95%) and 202 (96%, 95% CI 94–99%) would definitely want the boy to get circumcised if available free of charge and performed safely before and after informational session respectively (McNemar’s exact statistic 5.00, $P = 0.025$ for pre-post comparison). After the informational session only 1 (0.5%) parent/guardian would not want his/her boy circumcised. Higher proportions of parents/guardians than adolescents would “definitely want” adolescent male circumcision, in both villages (Figure 1B). Prior to the informational session, responses regarding the acceptability of MC among 222 responding adolescent-parent/guardian pairs were as follows: both members of 142 pairs would “definitely want” circumcision while in 6 pairs both chose a response option other than “definitely want.” In 65 pairs, the parent/guardian would “definitely want” the boy to be circumcised while the boy chose an option other than “definitely want”, and in 9 pairs, the converse was true.

Reasons for Circumcision, and Concerns

Reported motivation for circumcision and concern regarding the procedure differed between adolescents that “definitely want” and those that did not “definitely want” circumcision. The potential benefit of “protection from other illnesses” was more frequently reported as the main reason to be circumcised among adolescents definitely wanting circumcision than those not definitely wanting circumcision— 42% and 28%, respectively. Boys not definitely wanting circumcision were more likely to report concern of health problems during or after the procedure (34%) than boys definitely wanting circumcision (14%). No significant differences were detected between the responses of parents/guardians of boys definitely wanting and the parents/guardians of boys not definitely wanting circumcision regarding the benefits and risks of the procedure as shown in Table 2.

Overall, protection from HIV (42%) and protection from other illnesses (39%) were the most frequently chosen reasons cited by boys for wanting to be circumcised. Similarly, among parents/guardians of adolescent boys, 40% reported protection from HIV as the main reason they might want their son circumcised, while 47% reported protection from other illnesses. Pain and the possibility of complications were the most frequently reported reasons by boys for not wanting to be circumcised. Among adolescents, 129 (49%) boys indicated that they were principally “worried about pain” and 51 (19%) indicated that they were principally worried about “health problems during or after the operation”. Few adolescents voiced concerns about peer or sexual partner acceptance of circumcision. Responses from parents/guardians were similar with 66 (32%) reporting pain and 38 (19%) reporting the possibility of subsequent health problems as the main concern about having

their boy circumcised. A total of 64 (24%) adolescent boys and 89 (44%) parents/guardians reported that they had no concerns regarding adolescent circumcision.

Circumcision Preferences

A majority of adolescents and parents/guardians indicated that the boy should be the principal decision-maker regarding his circumcision; however, household disagreement on this issue was common (Table 3). Among 221 responding adolescent and parent/guardian pairs, 88 (40%) disagreed on who should be making the decision. Thirty-one (35%) of these 88 disagreeing pairs also differed in their decision regarding circumcision— 27 pairs where the parent/guardian strongly favored the adolescent's circumcision but the adolescent himself did not, and 4 pairs where the adolescent strongly favored circumcision but his parent/guardian did not.

Circumcision during infancy and childhood was preferred by both groups with 136 (65%) parents/guardians favoring neonatal circumcision. Only 2 (1%) boys and 2 (1%) parents/guardians preferred circumcision after age 20. Adolescent boys and their parents/guardians shared similar preferences regarding where male circumcision should be performed: nearly all adolescents and parents/guardians felt that the hospital was the most appropriate setting for circumcision (261 [97%] and 206 [98%], respectively). However, 96 (46%) parents/guardians felt that circumcision should be linked to traditional practices, 73 (65%) in Mochudi and 26 (27%) in Molepolole (Rao-Scott $\chi^2 = 32.3$, $P < 0.001$ for village comparison).

Predictors of Acceptability of Male Circumcision Among Adolescents

Among adolescents (before the informational session), residence in Mochudi, correct description of circumcision, Christian religion, and lack of concern regarding the procedure were significant predictors of acceptance of circumcision in multivariate analysis (Table 4). However, after the informational session, only residence in Mochudi and absence of concerns regarding the procedure remained significant predictors of acceptability of MC among boys. Knowledge and attitudes of the adolescent's parent/guardian were not found to be significant predictors of acceptability of circumcision to the boy.

Discussion

Among adolescent boys and their parents/guardians in two large villages in Botswana, knowledge and acceptability of male circumcision for HIV prevention was high. Most boys and parents/guardians surveyed could correctly describe male circumcision and its established preventive effect against HIV infection. After an informational session on the risks and benefits of male circumcision, three-quarters of uncircumcised boys interviewed reported that they definitely want to be circumcised. Nearly all parents/guardians surveyed wanted their boys to be circumcised if the procedure were provided free and could be done safely.

Acceptability of male circumcision for HIV prevention has not been previously assessed among adolescents. The degree of knowledge and acceptability of male circumcision that we observed is somewhat higher than reported in surveys of adults from elsewhere in Africa [25–30]. It is possible that the high acceptability of male circumcision in this study reflects early success of a campaign promoting MC in Botswana [12, 24]. However, prior to the initiation of the national circumcision campaign, a study of adults in Botswana found similarly high rates of acceptability among uncircumcised men and among parents considering circumcision of male children [14]. In addition, another survey of post-partum mothers documented high acceptability of neonatal male circumcision in Botswana [16].

Not all adolescents reported willingness to be circumcised, and it is also likely that many of the boys expressing willingness to be circumcised will not in fact seek circumcision. Our findings may provide insight on how programs might increase motivation among these adolescents. Adolescents who were less willing to be circumcised gave different responses to the advantages and consequences of circumcision than more willing boys. Boys reporting that they would “definitely want” to be circumcised more commonly cited “protection from other illnesses” than protection from HIV as the main reason to be circumcised. In contrast less circumcision-willing boys most frequently mentioned avoiding HIV. It is possible that messages focused on the idea of cleanliness or prevention of other illnesses could have more traction among this age group, than more frequently heard messaging regarding HIV. Pain was the most frequently cited worry among all adolescents, suggesting that raising confidence in the clinician’s ability to provide appropriate provision of pain control is important. Additionally, adolescents less willing to be circumcised frequently reported concerns regarding health problems during or following circumcision, as did their parents/guardians. Other circumcision studies have identified similar concerns [13, 31, 32]. These findings suggest that efforts to promote procedural competence and safety may, in addition to leading to improved circumcision outcomes, be vital to promoting greater willingness for others to seek circumcision. Nearly all participants felt that circumcisions should be performed in a hospital rather than a traditional setting.

Concerns about peer or partner acceptance, sexual function, and cultural appropriateness were not common (although concerns regarding partner acceptance and sexual function may become increasingly important among older boys as more of them become sexually active). This is somewhat encouraging, as it does not suggest that these factors are likely to pose significant obstacles to uptake of MC by adolescents in this setting.

While the legal age of consent for medical procedures is 18 years of age in Botswana, the majority of adolescent boys and slight majority of parents/guardians preferred that the boy make the final decision. Forty percent of adolescent-parent/guardian pairs disagreed on who should decide whether the adolescent is circumcised. Furthermore, 33% of pairs disagreed in their desire for the adolescent to be circumcised. These findings suggest the potential for conflict and that adolescent circumcision programs should carefully consider how to appropriately balance legal statutes, divergent opinion between boys and their parents/guardians, and the promotion of adolescent circumcision.

The strength of this study includes our ability to estimate the awareness and acceptability of male circumcision among a key group— adolescent boys— and their parents/guardians concurrently. Furthermore, we employed a cluster design survey (rather than interviewing a pure convenience sample, for example), which should enhance representativeness of the results across these populations. However, our study was subject to several limitations. First, the results may not be applicable to the rest of the country or region (however, the primary reasons that boys cited for wanting to be circumcised were health-related rather than cultural, suggesting that the relatively high acceptability of circumcision in these adolescents was not primarily related to cultural factors). There is a potential for selection bias as we were able to interview only 68% of potentially eligible boys. In addition, while our survey instrument allowed for the possibility of an open response to each item (with the listed responses based upon prior focus group interviews and surveys among men in Botswana), it is possible that this approach limited the array of opinion expressed. Finally, self-reported acceptability of male circumcision among boys may not always reflect actual uptake of the procedure (an inherent limitation of interview-based surveys).

The effect of male circumcision on the HIV epidemic is arguably likely to occur most rapidly if adolescent boys are circumcised before they are at risk for HIV acquisition. Male

circumcision prior to the greatest risk of HIV-acquisition may also help alleviate some of the concern regarding increased transmission risk (to or from a sexually active circumcised individual) during the period of healing following the procedure. Results from this study show that male circumcision is highly acceptable among adolescent boys and their parents/guardians in Botswana if done for free, safely, and with adequate pain control in a hospital setting. It may be appropriate and advantageous for public health programs in countries with generalized HIV epidemics and low rates of male circumcision to provide education and services specifically aimed at this age group incorporating ways to increase male circumcision uptake.

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Figure 1. Acceptability of adolescent circumcision

Panel A displays the responses of uncircumcised adolescents, before and after the informational session, to the question, “would you want to be circumcised if it could be done safety and free of charge?” Panel B shows the proportion of adolescents, and their parents/guardians, who report that they would “definitely want” to be circumcised, or have their boy/ward circumcised by study village

Table 1

Characteristics of adolescent study participants and their parents/guardians

Characteristics	Overall No. (%)	Mochudi No. (%)	Molepolole No. (%)	Statistic	P-value
ADOLESCENT BOYS	N=269	N=146	N=123		
Median age, years (10 th , 90 th percentiles)	15 (13, 18)	15 (13, 17)	15 (13, 18)	Z=1.17	0.242
Ethnicity				$\chi^2=2.40$	<0.001
Bakgatla	130 (48)	129 (88)	1 (2)		
Bakwena	115 (43)	1 (1)	114 (93)		
Others	24 (9)	16 (11)	8 (6)		
Educational Level				$\chi^2=6.58$	0.160
Not in School	4 (1)	4 (3)	0 (0)		
Primary	79 (29)	46 (32)	33 (28)		
Secondary	180 (67)	94 (64)	86 (68)		
Other	4 (1)	2 (1)	4 (4)		
Religion				$\chi^2=22.8$	<0.001
Christian	142 (53)	96 (66)	46 (37)		
None	125 (47)	50 (34)	75 (61)		
Already Circumcised				$\chi^2=5.93$	0.052
Yes	19 (7)	15 (10)	4 (3)		
No	249 (92)	130 (89)	119 (97)		
Don't Know	1 (0)	1 (1)	0 (0)		
If circumcised, at what age?				$\chi^2=1.34$	0.247
Birth to 6 months	6 (38)	4 (33)	2 (67)		
> 6 months	10 (63)	9 (69)	1 (33)		
PARENTS/GUARDIANS	N=210	N=113	N=97		
Parents				$\chi^2=0.377$	0.828
Fathers	20 (10)	11 (10)	9 (9)		
Mothers	97 (46)	50 (44)	47 (48)		
Guardians	93 (44) (20 men)	52 (46) (13 men)	41 (42) (7 men)		

Characteristics	Overall No. (%)	Mochudi No. (%)	Molepolole No. (%)	Statistic	P-value
Median Age, years (10 th , 90 th percentiles)	38 (24, 58)	38 (24, 57)	39 (25, 58)	Z=-1.30	0.193
Already Circumcised (n=34 responding men)	14 (41)	11 (46)	3 (30)	$\chi^2=0.730$	0.393

^a χ^2 test (or Wilcoxon Rank Sum test) comparing Mochudi and Molepolole participants.

Table 2

Reasons for wanting and not wanting circumcision.

Prompt	Boys definitely wanting circumcision percent (95% CI)	Boys NOT definitely wanting circumcision percent (95% CI)	P-value (χ^2 statistic) ^a
Adolescent Boys			
Main reason why you would want to be circumcised?	N=186 boys	N=60 boys	<0.001 (χ^2 =1290)
Protection from HIV	40.3 (34–47)	46.7 (36–57)	
Protection from other illnesses	41.9 (36–48)	28.3 (17–39)	
Hygiene	14.0 (9–19)	8.3 (1–16)	
Other reasons ^b	3.8 (1–7)	5.0 (0–10)	
No reason	0	11.7 (6–18)	
Main reason why you would NOT want to be circumcised?			
Pain	49.5 (42–57)	54.8 (43–67)	0.004 (χ^2 =13.5)
Health problems during/after operation	14.3 (9–19)	33.9 (21–46)	
Other reasons ^c	5.5 (3–8)	9.7 (3–17)	
No reason	30.8 (25–37)	1.6 (0–5)	
Parents/Guardians			
Main reason why you would want your boy/ward to be circumcised?	N=169 boys	N=52 boys	0.350 (χ^2 =3.29)
Protection from HIV	38.5 (32–45)	48.1 (35–61)	
Protection from other illnesses	47.3 (40–54)	32.7 (19–46)	
Hygiene	7 (4–11)	11.5 (4–19)	
Other reasons ^d	6.5 (2–12)	7.7 (1–15)	
No reason	0	0	
Main reason why you would NOT want your boy/ward to be circumcised?			
Pain	35.6 (28–43)	26.0 (16–36)	0.058 (χ^2 =7.47)
Health problems during/after operation	12.9 (8–18)	28.0 (15–41)	
Other reasons ^e	6.7 (3–11)	2.0 (0–6)	
No reason	44.8 (38–52)	44.0 (30–58)	

NOTE: In households with more than one adolescent boy, a single parent's responses may be paired with more than one boy.

^aWald χ^2 .

^bOther reasons reported by adolescents as main reason they wanted to be circumcised included: friends circumcised (3), culture (1), religion (1), no stated reason (1).

^cOther reasons reported by adolescents as main reason not to be circumcised included: friends not circumcised (2), shy to undress for the procedure (1), inability to discuss with parents (1), do not want female doctor in attendance (1), concern about what friends will say (1), and no interest in the MC procedure (1).

^dOther reasons parents and guardians reported as main motivation for having boy/ward circumcised included: appearance (3), our culture (6), his eventual sexual pleasure (3), and no stated reason (4).

^e Other reasons parents and guardians reported as the main motivation for not having boy (ward) circumcised included: his friends are not circumcised (1), reduced sexual pleasure (1), no stated reason (11).

Table 3

Responses of adolescent boys and their parents/guardians to select questions.

	Adolescent Boys percent (95% CI)	Parents/Guardian percent (95% CI)
Who should be the main person involved in deciding whether or not you would get circumcised? (<i>N</i> =266 boys and 210 parents/guardians)		
The boy himself	68.8 (63–74)	56.2 (50–62)
Father	10.9 (7–15)	12.4 (8–17)
Mother	14.7 (10–19)	23.3 (18–29)
Others	4.9 (3–7)	8.1 (4–12)
Unsure	0.8 (0–2)	0
How do you think circumcision would be generally viewed by members of your community? (<i>N</i> =269 boys and 209 parents/guardians)		
Favorably	45.7 (40–52)	55.0 (49–61)
Mixed	25.3 (20–30)	5.7 (3–9)
Unfavorably	13.4 (9–17)	24.9 (19–31)
Unsure	15.6 (11–20)	14.3 (10–19)
What do you think is the best age to be circumcised? (<i>N</i> =268 boys and 210 parents/guardians)		
Newborn Baby	37.3 (21–43)	64.8 (58–71)
1–10 years	23.1 (18–28)	14.3 (10–19)
11–15 years	23.1 (18–28)	11.0 (7–15)
16–20 years	13.1 (9–17)	1.0 (0–2)
Over 20 years old	0.7 (0–2)	0.5 (0–1)
Unsure	2.6 (1–4)	1.4 (0–3)
Where do you think is the best place for a boy/man to be circumcised? (<i>N</i> = 268 boys and 210 parents/guardians)		
Hospital	97.4 (95–100)	98.1 (96–100)
Home	0.7 (0–2)	0
Traditional Setting	1.9 (0–4)	1.0 (0–2)
Unsure	0	1.0 (0–2)
Do you think safe circumcision practices should be linked to traditional practices, such as bogwera? (<i>N</i> = 209 parents/guardians)		
Yes	— ^a	47.3 (42–53)
No	— ^a	39.2 (33–45)
Unsure	— ^a	13.4 (9–18)

^a Adolescents were not asked this question.

Table 4

Significant predictors of adolescent acceptability of circumcision

Characteristics	Prior to informational session		After informational session	
	aOR (95% CI)	P-value ^a (χ^2 statistic)	aOR (95% CI)	P-value ^a (χ^2 statistic)
Village		0.006 ($\chi^2=7.56$)		< 0.001 ($\chi^2=11.7$)
Molepolole	1 [reference]		1 [reference]	
Mochudi	2.56 (1.31–4.99)		3.35 (1.68–6.69)	
Adolescent can correctly describe circumcision ^b		0.041 ($\chi^2=4.16$)		0.499 ($\chi^2=0.457$)
No	1 [reference]		1 [reference]	
Yes	2.28 (1.03–5.04)		1.33 (0.58–3.02)	
Religion		0.032 ($\chi^2=4.58$)		0.379 ($\chi^2=0.774$)
Christian	1 [reference]		1 [reference]	
None or other	0.49 (0.26–0.94)		0.73 (0.37–1.46)	
Main concern regarding being circumcised		< 0.001 ($\chi^2=16.9$)		0.003 ($\chi^2=13.7$)
No reported concerns	1 [reference]		1 [reference]	
Pain	0.13 (0.04–0.45)		0.04 (0.01–0.28)	
Health problems	0.06 (0.01–0.23)		0.02 (0.00–0.16)	
Other	0.07 (0.01–0.35)		0.03 (0.00–0.28)	

NOTE: Other predictors included in original model but removed for non-significance include: adolescent age, educational level, and knowledge of health benefits of circumcision, knowledge of health benefits of circumcision, perception of community acceptability of MC, and participating parent/guardian's acceptability of adolescent circumcision. aOR, adjusted odds ratio

^aWald χ^2 .

^bPrior to informational session.