Factors associated with acceptability of child circumcision in Botswana- a cross sectional survey.

Mpho Keetile*[1] & Motsholathebe Bowelo[2]

[1]Department of Population Studies, [2]Department of Population Studies

University of Botswana, Private Bag 00705, Gaborone, Botswana

***For correspondence**: mphokeet@yahoo.com ; Phone (+267) 355 2711

Abstract

Safe male circumcision occurs at a wide range of ages. In Botswana, safe male child and neonatal circumcision has been recently adopted as a potential strategy to prevent HIV/AIDS transmission in later life. This paper presents results on factors associated with acceptability of child and neonatal circumcision in Botswana. Data used was derived from a cross-sectional survey, the Botswana AIDS Impact Survey (BAIS) IV, conducted in 2012. A sample of 9504 men and women in ages 15-64 years who had successfully completed the individual questionnaire during the survey were selected and included for analysis. Results indicate that about 86% of participants said they would circumcise their male children aged 18 years and below, while 92% were aware of the safe male circumcision program. Bivariate analyses results show that acceptability of child and neonatal circumcision was significantly associated with sex, age, education, religion, residence, HIV status of the parent, fathers circumcision status, father's intention to circumcise and parent's knowledge about the safe male circumcision program. Multivariate analyses results indicate positive association between parent's negative HIV status (OR, 3.5), father being circumcised (OR, 3.7), father's intention to circumcise (OR, 9.3) and acceptability of child and neonatal circumcision. Proper understanding of factors associated with acceptability of child and neonatal circumcision will facilitate the successful rollout of the Early Infant Safe Male Circumcision (EISMC) program.

Introduction

Male circumcision is one of the oldest surgical procedures, traditionally accepted as a mark of cultural identity or religious importance or for perceived health benefits such as improved penile hygiene or reduced risk of infection (WHO/UNAIDS, 2008). Traditionally, circumcising societies and religious sects have used the procedure for cultural and religious purposes (Gray et al. 2007). Recent epidemiological evidence has shown that adult circumcision reduces the risk of acquiring HIV infection in heterosexual males by 50–60% (Gray et. al. 2007). Several African countries with a high prevalence of HIV are now expanding access to safe circumcision (Bailey et al. 2007 & Auvert et al. 2005). Observational studies suggest that the protective effect of male circumcision is similar if circumcision occurs neonatally (Weiss et al. 2000). The immediate focus of circumcision for HIV prevention has been on adolescents and adult men, but a longer-term HIV prevention strategy is likely to include the provision of neonatal and child circumcision.

Neonatal and child circumcision is routinely practised in most countries in the Middle East (in countries such as, Egypt, the Islamic Republic of Iran, Jordan, Lebanon, the Syrian Arab Republic, Turkey and Yemen), Israel (Owusu-Danso, 2006, Al-Herbish 2002 & Al-Marhoon & Jaboub 2006), the USA (Xu et al. 2007) and some West African countries, including Senegal, Ghana and parts of Nigeria (Okeke et al. 2006 & Myers et al. 1985). This type of circumcision is done mainly for religious and cultural purposes. Studies have provided that the best age to perform circumcision is in infancy and it has been shown to have a better protective effect than those performed at any other age (Kelly R, et al 1999). It is also safer, easier and less costly but it is not widespread in southern Africa countries including Botswana (Plank et al, 2010).

Based on evidence from studies conducted in parts of sub Saharan Africa in particular the randomized clinical trials (RCTs) conducted in Uganda (Gray et al., 2007); Kenya (Bailey et al., 2007) and South Africa (Auvert et al., 2005), safe male circumcision has a protective effect against HIV as well as reducing incidences of other sexually transmitted infections (STIs) like genital ulcers, human papilloma virus (HPV) and Chlamydia in female partners of men. Furthermore early infant and male circumcision is recognised as a long term preventive strategy to reduce new infections particularly in the neonatal period as recommended by UNICEF and WHO. (WHO/UNAIDS, 2009 P.1). In 2009 Botswana launched the safe male

circumcision (SMC) policy as part of the comprehensive strategy on HIV prevention. Following the Botswana government's policy decision, neonatal male circumcision services are being extended to many public health facilities free of charge with the intention to increase the accessibility of the service to as many males as possible.

Previous studies have shown high adult male circumcision acceptability rate in Botswana and in the region (Kebaabetswe et al 2010, Lagarde et al 2003 and Halperin, 2005). In fact, Kebaabetswe et al, (2003), recommended that circumcision services for the children of Botswana would be highly acceptable, and believed that parents in Botswana—as in most developed countries worldwide be offered the option of hospital based circumcision for their male children to protect them from the acquisition of HIV. While study findings have revealed that there is a high acceptability of adult male circumcision in general in Botswana, it is not clear whether this is the case with neonatal and child circumcision. Neonatal male circumcision is generally not yet available and not commonly performed in southern Africa and there are questions regarding its acceptability, feasibility, safety and optimal approaches to widespread implementation (Plank et al 2010.)

There is little information on factors influencing parental acceptance of neonatal and child circumcision in Botswana. Plank et al. (2010) conducted a study in South Eastern part of Botswana among women to assess whether they would accept their new-born male children to be circumcised. The main limitations of the study by Plank et al. (2010) is that it did not include men and also it was not nationally representative since it was based on one side of the country. The current study seeks to fill in these gaps by using a nationally representative data and also including men who are the key decision makers in the reproductive health of their families. This paper sets out to address the following i) to determine the acceptability levels of child neonatal circumcision among mothers and fathers and ii) To explore factors associated with decision of mothers and fathers to circumcise their children and neonates.

Theoretical framework

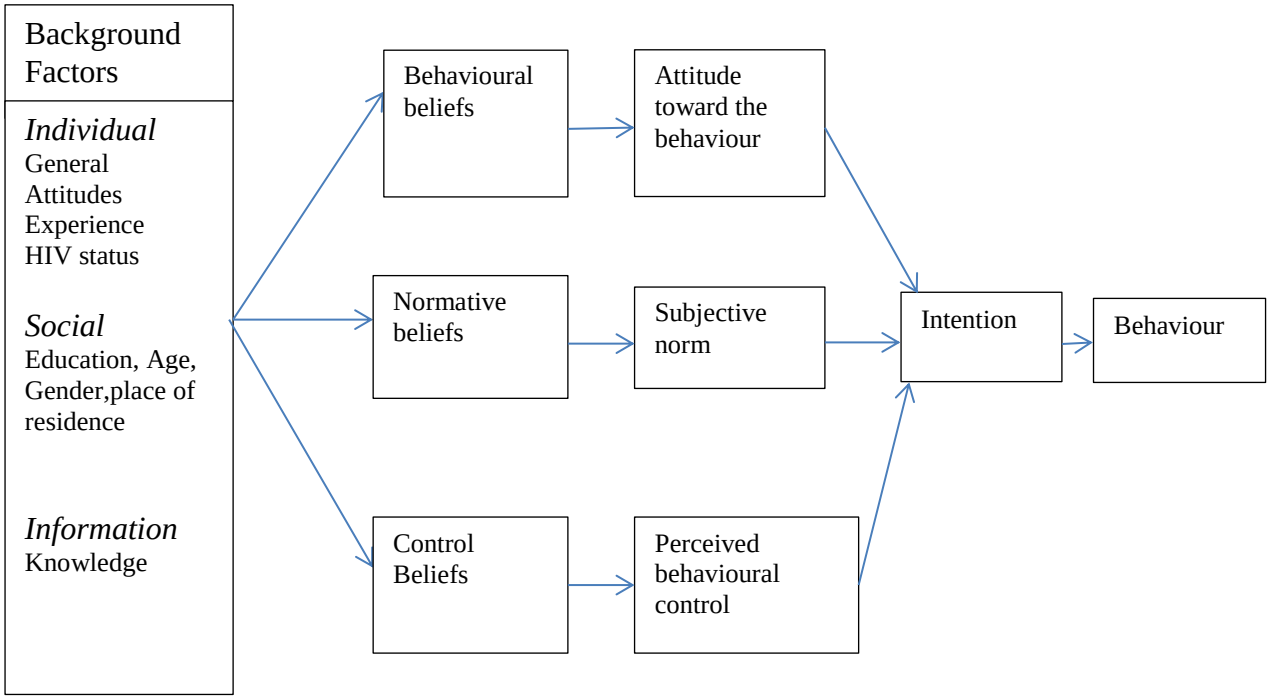
This research seeks to employ the Theory of Reasoned Action, (TRA) developed and many times modified by Ajzen and Fishbein (1969, 1970, 1972, 1975, 1980). This model proposes that behavioural intentions are a combined function of the attitude toward performing a particular behaviour in a given situation and of the norms perceived to govern that behaviour

multiplied by the motivation to comply with those norms (Ajzen & Fishbein, 1969). This theory further assumes that human beings are usually quite rational and make systematic use of the information available to them, "people consider the implications of their actions before they decide to engage or not engage in a given behavior" (Ajzen & Fishbein, 1980, p. 5).

As routine circumcision is recommended for medical reasons (avoidance of HIV in future life), mothers and fathers who may choose circumcision must also believe that circumcising their infants is due to benefits of avoiding HIV/AIDS in future hence health value. This paper will attempt to determine which factors are influential in parent's decision regarding routine circumcision of their child and infant boys at clinical settings. We choose this model as we believe some people make the decision to circumcise based on what they perceive to be normal and socially acceptable to them at the time of the decision. Some may choose a decision to circumcise given the knowledge they may had on the benefits or disadvantages of circumcision as a procedure.

The assumption of TRA is that most behaviors of social relevance are under volitional control and a person's intention to perform or not perform a behavior as the immediate determinant of that action (Ajzen & Fishbein, 2005 cited by Dyal, 2006). A person's intention regarding routine circumcision is determined by personal and social influences. One personal factor is the person's evaluation of the outcome of circumcision, which can be either positive or negative. Parents who believe circumcision is necessary for future HIV infection avoidance may choose the procedure. Parents who believe it to be unnecessary will have a negative evaluation of circumcision and may choose not to circumcise their child. Subjective norm is the other determinant of a person's intention which is a person's perception of the social pressures applied to perform the behaviour (Ajzen & Fishbein, 2005). As illustrated in figure 1 person's intentions and behaviors are influenced by certain "background factors" which include individual, social and information factors.

Figure 1. Theory of Reason Action and Planned Behavior.



Adapted and modified from Brenda Wells Dyal, 2006

The above figure shows one way in which the intentions and behavior can be represented. There are beliefs which are assumed to influence attitudes, subjective norms, and perceived behavioral control which, in turn, produce intentions and behavior (Ajzen & Fishbein, 2005).

Feng and Wu (2005), also state that, intention is the best predictor of behavior, and it is a function of the person's attitude toward performing the behaviour and general subjective norms concerning the performance of the behavior. For example, if a father intends to circumcise his son in future, he may eventually do so or he may also choose not to circumcise his son given the prevailing circumstances at the time. The Theory of Reasoned Action states that beliefs determine attitudes and subjective norms which then determine intention and the corresponding behavior (Ajzen & Fishbein, 1980). For example in relation to circumcision: if the child's father is circumcised, the father may also believe circumcision to be normal or necessary for their child and if not circumcised he may intend to get circumcised in future. In addition if your friends, colleagues and other community members are believed to have been circumcised, the parents, in particular the father can subjectively intend to circumcise their sons once born or decide otherwise.

Data and Methods

This paper uses data derived from the 2012 Botswana AIDS Impact Survey (BAIS-IV), which is is the fourth and latest of a series of nationally representative demographic surveys aimed at providing up to date information on the Botswana's HIV /AIDS epidemic. BAIS-IV employed a national two stage sample survey design. Data collection was done using smart phone tablets instead of the conventional paper based method. Estimates for response rates showed that 83.9% of persons aged 10 to 64 answered individual questions. The data also showed that 73.4% of population 6 weeks and above participated in HIV testing. The targeted sampled population (aged 10-64 years) for BAIS IV was 9,807 and from this 8,321 individuals were successfully interviewed yielding a response rate of 83,9 per cent. Sample selection for this paper was such that 9504 men and women aged 15 years and above was included for analyses.

Variable measurement

Dependent Variable

The dependent variable used in this paper is acceptability of neonatal and child circumcision, measured by the following question; *"Suppose you had male children aged below 18 years would you get them circumcised".* There were three outcomes for this question, yes=1, no=2 and unsure=3. The final outcomes for this paper are two, yes=1 (acceptance) and no=0 (refusal). Respondents who said they were unsure were filtered out.

Independent variables

This paper investigates the effects of the following variables on the decision to accept male child and neonatal circumcision;

i) Knowledge about safe male circumcision-This variable was derived from the following survey question; "Have you ever heard of Safe Male Circumcision or SMC program? Possible responses were yes=1 and no=2 .

ii) Religion of respondent[1]; This variable was derived from a question asking respondents about their main religious affiliations. The following religions were listed; Christianity=1, Islam=2,Bahai=3,Hinduism=4,Badimo=5,No religion=6

[1] Religion has been identified as one of the key determinants of circumcision

and other religions (open responses). The final variable codes were as follows; Christianity=1, Islam, Bahai, Hinduism, Badimo and other religions were grouped together and coded as Other non-Christian religions=2 and no religion was coded 3.

iii) Father's circumcision status-Father's circumcision status was derived from the surver question; "Are you circumcised"? Yes=1 and no=2, don't know response was filtered out.

iv) Intention to be circumcised; This was derived from the variable : "Do you intend to get circumcised in the next 12 months.

HIV status of the parent: This was derived from the question: "what was the result"? Positive=1, Negative =2, Don't want to tell=3 and Don't know=4. This was a follow-up question to the question asking respondents whether they were told/given results for their last HIV test. The don't want to tell and don't know responses were filtered out.Control variables used are age, education, marital status, and place of residence.

Data analysis

Data analysis implored in this article includes both bivariate and multivariate analyses. For Bivariate analysis chi-square tests and their significance levels were used to assess the association between acceptability of neonatal and child circumcision, behavioural and control variables. For multivariate analyses logistic regression was used to identify key factors associated with associated acceptability of neonatal and child circumcisions. Logistic regression results are presented in the form of unadjusted (Model I) and adjusted odds ratios (Model II), together with their confidence intervals (C.I.), which explain the probability of accepting neonatal and child circumcision in a particular category of variable in comparison with the reference category, while controlling other factors. Data analysis was done using Statistical Package for Social Sciences version 22 program (SPSS). Two models were used.

Logit Model I

Model I presents the probability of accepting neonatal and child circumcision based on socio-demographic factors. The regression equation for model I take the form;

$$ln\left(\frac{p}{1-p}\right) = \beta 0 + \beta 1 X$$

Where *p* is the probability that the parent is likely to accept their male child to be circumcised. *1-p* is the probability that the parent will not accept their male child to be circumcised. β0 and β1X are components of the regression equation, the βs represent regression coefficients and Xs represent a set of independent variables. The key independent variables used are parent's age, sex, residence, religion and education.

Logit Model II

Model II measures the probability of accepting child and neonatal circumcision based on a set of factors while controlling for potential confounders. Model II introduces behavioural factors which may influence the parent's decision to circumcise their male children and the regression equation fitted to data takes the form;

$$ln\left(\frac{p}{1-p}\right) = \beta 0 + \beta 1 X_1 X_2 \ldots\ldots\ldots X_k$$

Where *p* is the probability that the parent is likely to accept their male child to be circumcised. *1-p* is the probability that the parent will not accept their male child to be circumcised. β0 and β1X are components of the regression equation, the βs represent regression coefficients and Xs represent a set of independent variables and X_k is an array of behavioral independent variables which may influence the parent's decision to circumcise their male children. These are potential confounders to the decision to circumcise a male child.

Results

Sample description

Table I presents the sample population based on socio-demographic characteristics and a set of behavioural factors. Results indicate that there was slightly a high proportion of females (53%) than males (47%) in the sample. Respondents in ages 15-34 years accounted for about three fifths (60%) of the sample, while those in ages 35-44 years accounted for a fifth (20%). The remaining fifth was for those in ages 45-64 years. Secondary education (57%) respondents were the prominent education group in the sample, and respondents from rural

areas accounted for 64%. The predominant religious affiliation in the sample is Christianity (87%) followed by no religious affiliation (9%).

When considering behavioural factors, 86% of respondents said that they would accept their male children aged below 18 years to be circumcised. Meanwhile 20% of respondents in the sample reported that they were HIV positive, while 28% of men in the sample reported that they were circumcised. Results also indicate that 54% of men in the sample had the intention to circumcise in the next twelve months, whereas 92% of study participants knew about the safe male circumcision program.

Acceptability of neonatal and child circumcision

Table II show acceptability of neonatal and child circumcision among respondents by sample characteristics. Results indicate that a slightly high proportion of females (87%) than males (85%) reported that they would get their male children to be circumcised. When considering age of participants, a relatively low proportion of respondents in ages 25-34 years (84%) than in other ages (over 86%) said they would accept their male children to be circumcised. Quite conversely, a significantly small proportion of respondents with tertiary education (83%) than those with primary (92%) and secondary education (88%) reported that they would get their male children to be circumcised. Results also indicate that more respondents in urban areas than rural areas reported that they would accept their male children to be circumcised.

Furthermore, a significantly high proportion of Christian (87%) and participants of other non-Christian religions (86%) reported that they would circumcise their male children compared to individuals who said they do not have any religion (78%). A higher proportion of HIV positive (90%) respondent than those negative (86%) said they would accept circumcision of their male children. A significant proportion of circumcised men (95%) than uncircumcised men (81%) reported that they would circumcise their male children. Meanwhile, 94% of men who intended to be circumcised in the next twelve months, said they would accept circumcision of their male children, compared to only 64% of men who said they did not intend to get circumcised themselves. Results also show that about 88% of participants in the sample who knew about the safe male circumcision program reported that they would circumcise their male children compared to those who did not know about the program (59%).

Logistic regression results for the probability of accepting neonatal and child circumcision

Model I results

Table III shows the logistic regression results for the probability of accepting neonatal and child circumcision among men and women. Results indicate that sex of the respondent is a significant factor for the probability of accepting child circumcision when considering demographic variables only. For instance, women were 20% more likely (OR 1.19, p=0.023) to accept their children to be circumcised compared to men. Young men and women in ages 15-24 years and 25-34 years were 34% and 36%, respectively, less likely to accept their children to be circumcised compared to those in ages 55-64 years. Meanwhile education was not a significant determinant of accepting child circumcision. When considering place of residence, respondents from rural areas were 24% less likely (OR 0.76, p=0.001) to accept their children to be circumcised. Moreover, results indicate that the odds of accepting child circumcision were significantly higher among Christians (OR 1.55, p=0.000) and other non-Christian religions (OR 1.63, p=0.030) respondents than among individuals with no religion.

Model II results

Model II introduces behavioural factors. Results indicate that when behavioural factors were introduced, sex and education were not significant predictors of accepting male child circumcision. Meanwhile results indicate that the odds of accepting neonatal and child circumcision was high among individuals in ages 25-34 (OR 1.34, p=0.000), 35-44 (OR 1.41, p=0.000) and 45-54 years (OR 1.31, p=0.000) compared to those in ages 55-64 years. Respondents residing in rural areas were less likely (OR 0.96, p=0.027) to accept their male children to be circumcised compared to those in urban areas. Christians (OR 2.36,p=0.000) and respondents of other non-Christian religions (OR 3.10,p=0.000) were more likely to accept neonatal and child circumcision than individuals with no religion.

One interesting observation is that individuals who reported that they were HIV negative were more likely to accept child circumcision than those who reported that they were HIV positive. Meanwhile the odds of accepting male child circumcision were significantly higher among men who were circumcised (OR 3.69, p=0.000) than those who were not circumcised.

Men who reported that they had the intention to be circumcised in the next 12 months after the survey were 9 times more likely (OR 9.32,p=0.000) to say they would circumcise their male children compared to those who did not have any intention to circumcise in the next 12 months. Quite conversely respondents who said they knew about safe male circumcision program were less likely to circumcise (OR 0.85, p=0.000) their children than those who did not know about the program.

Discussion

Results of this study indicate relatively high levels of acceptability of neonatal and child circumcision in Botswana. Similar finding were observed by Plank et al (2010) in a study among women in South Eastern Botswana. The findings of this study is in tandem with previous studies which have shown high levels of male circumcision acceptability in sub Saharan Africa region (Kebaabetswe et al 2010, Lagarde et al 2003 and Halperin, 2005). Recently the government of Botswana has adopted neonatal circumcision in the HIV/AIDS prevention package. This is done, in a context where little is known nationally about the acceptability of neonatal and child circumcision in the general population. These results provide impetus for the successful roll out of the Early Infant Safe Male Circumcision (EISMC) program.

Acceptability of neonatal and child circumcision in Botswana was associated with gender of parents, with mothers more likely to accept their male children to be circumcised. However, although mother's were more likely to accept their male children to be circumcised, previous studies in sub Saharan Africa have shown that fathers have more decision-making power to decide over neonatal and child circumcision than do mothers (Westercamp and Bailey 2007; Binagwaho et al.2010; Alanis & Lucidi 2004). Those studies have shown that when parents disagreed about circumcising their male children, men's decision not to circumcise tended to predominate, regardless of whether the mother favored circumcision. Even qualitative studies have shown similar finding that men's decision to accept neonatal and child circumcision is instrumental, for instance a qualitative study by Mavhu et al. (2012) in Zimbabwe has shown that both male and female participants concurred that men have the ultimate decision to circumcise their male children. Male children circumcision programs should include education, information and communication materials for men to enhance acceptability.

Adjusting confounders we found that father's intention to circumcise was also significantly associated with the likelihood of accepting neonatal and child circumcision status. The theory of reasoned action used to guide this study posits that intention is the best predictor of behaviour, and it is the function of person's attitude towards performing behaviour or taking action towards behaviour. For instance, a father who validates circumcision may have the intention to be circumcised and that intention may trickle down to the desire to have their male child circumcised. This is so because a man who is willing to be circumcised has the belief that circumcision is acceptable, hence positive attitude and subjective norms which then determine the intension to accept child circumcision.

The findings of this study also show that fathers who reported that they were circumcised were more likely to accept their male children to be circumcised. Similar findings were observed by Kazilimani (2014) that father's circumcision status was cited by women as one of the reasons for their positive decision to accept circumcision of their male children in Zambia. Furthermore, in Nyanza province, Kenya parents also identified father's circumcision status as being one of the strongly associated factors with decision for male child circumcision (*IRINNEWS 2010*). A father's intention regarding accepting child circumcision is determined by personal and social influences. A circumcised man perceives circumcision as a socially acceptable practice hence they would easily accept it. Father's personal evaluation of the outcome of the procedure will have a direct influence on their decision to circumcise their male children.

Meanwhile parents who reported that they were HIV negative were more likely to accept their male children to be circumcised than parents who reported that they were HIV positive. This is against the expected norm, where the common assumption would be parents who report HIV positive status would be eager to circumcise their male children. This finding is in contrast with what was found by Mugwanya et al. (2015) that HIV positive parents showed high propensity and willingness to circumcise their male children than HIV negative parents in Kampala, Uganda. There is need to understand the complications underlying the attitude of HIV positive parents to refuse circumcision of their male children, and this understanding can only be unravelled through qualitative research.

Finally religion was found to be one of factors influencing circumcision acceptability. Those who reported themselves as Christians and non-Christians such as Muslim, Hindu were more

likely to accept their male children to be circumcised than those who reported to be non religious. This findings are consistent with results from other studies such as in Malawi (Ngalande et al, 2006,) where acceptability was higher in central and southern districts where MC is practiced by a minority Muslim group (Yao) while in Kenya church membership is associated with circumcision(Mattson et al, 2005) and furthermore Lukobo and Bailey(2007) reported that there is prevalent Zambian perception that circumcision is being linked with Muslim or the belief that Christians should practice MC since Jesus was circumcised and the Bible teaches the practice.

Conclusion

The study found out that neonatal and child circumcision is highly acceptable among Batswana. Furthermore acceptability of child circumcision is significantly correlated with father's circumcision status, fathers intention to circumcise, and parent's HIV status. The findings of the study contribute to existing plethora of research on neonatal child circumcision in Botswana and provide evidence base for the successful implementation and roll-out of the EISMC program. There is need to improve demand creation strategies for the EISMC program in order to achieve far-reaching acceptance levels.

Appendix_Tables
Table I: Sample characteristics

Variable	%	Number
Sex		
Male	47.1	4481
Female	52.9	5023
Age		
15-24	29.9	2842
25-34	29.9	2842
35-44	20.1	1910
45-54	12.7	1207
55-64	7.5	713
Education		
Primary/less	21.2	2015
Secondary	56.7	5389
Tertiary/higher	22.1	2100
Place of residence		
Urban	36.1	3434
Rural	63.9	6070
Religion		
Christianity	86.5	8221
Other non-Christian	4.2	399
No religion	9.3	884
Suppose you had male children aged below 18 years would you get them circumcised?		
Yes	85.9	8164
No	14.1	1340
HIV status?		
Positive	20.0	1901
Negative	80.0	7603
Father's circumcision status?		
Circumcised	27.6	1237
Uncircumcised	72.4	3244
Father's intention to circumcise?		

Yes	53.8	2411
No	46.8	2097
Knowledge about circumcision		
Yes	92.1	8753
No	7.9	751

Table II: Acceptability of neonatal and child circumcision among respondents by sample characteristics.

Variable	**Accept child to be circumcised**		
	Yes	**No**	**n**
Sex			
Male	84.5	15.5	4481
Female	87.1	12.9	5023
	Chi-square=8.918	*P=0.003*	
Age			
15-24	85.7	14.3	2842
25-34	83.7	16.3	2842
35-44	88.2	11.8	1910
45-54	88.1	11.9	1207
55-64	85.9	14.1	713
	Chi-square=17.353	*P=0.002*	
Education			
Primary/less	92.1	8.9	2015
Secondary	88.2	11.8	5389
Tertiary/higher	83.1	16.9	2100
	Chi-square=24.426	*P=0.000*	
Place of residence			
Urban	88.1	10.9	3434
Rural	84.6	15.4	6070
	Chi-square=15.205	*P=0.000*	
Religion			
Christianity	86.8	13.2	8221
Other non-Christian	85.7	14.3	399
No religion	78.1	21.9	884
	Chi-square=34.716	*P=0.000*	
HIV status?			
Positive	90.3	9.7	1901
Negative	86.1	13.9	7603
	Chi-square=12.092	*P=0.001*	
Father's circumcision Status?			
Circumcised	94.5	5.5	1237
Uncircumcised	80.9	19.1	3244
	Chi-square=85.810	*P=0.000*	
Father's intention to circumcise?			
Yes	94.2	6.8	2411
No	63.7	36.3	2097

	Chi-square=293.010 P=0.000		
Knowledge about safe male circumcision program			
Yes	87.8	12.2	8753
No	58.8	41.2	751
	Chi-square=	P=0.000	

Table III: Odds ratios (OR) and 95% confidence Intervals for the probability of accepting neonatal and child circumcision

Variables	Model I(Unadjusted ORs)		Model II (Adjusted ORs)	
	OR (95% CI)	p-value	OR (95% CI)	p-value
Socio-demographics				
Sex				
Male	1.00		1.00	
Female	1.19(1.03-1.39)	0.023	0.83(0.55-1.25)	0.998
Age				
15-24	0.66(0.45-0.97)	0.033	0.72(0.67-0.77)	0.000
25-34	0.64(0.44-0.93)	0.020	1.34(1.25-1.43)	0.000
35-44	0.99(0.68-1.48)	0.998	1.41(1.31-1.50)	0.000
45-54	1.33(0.86-2.04)	0.198	1.31(1.21-1.41)	0.000
55-64	1.00		1.00	
Education				
Primary/less	1.00		1.00	
Secondary	0.62(0.19-2.03)	0.425	0.60(0.17-2.01)	0.422
Tertiary/higher	0.97(0.29-3.21)	0.961	0.93(0.26-3.19)	0.951
Place of residence				
Urban	1.00		1.00	
Rural	0.76(0.65-0.89)	0.001	0.96(0.93-0.99)	0.027
Religion				
Christianity	1.55(1.22-1.97)	0.000	2.36(2.27-2.45)	0.000
Other non-Christian	1.63(1.05-2.54)	0.030	3.10(2.91-3.31	0.000
No religion	1.00		1.00	
Behavioural factors				
HIV status				
Positive			1.00	
Negative			3.51(3.34-3.69)	0.000
Father's circumcision status				
Circumcised			3.69(3.58-3.81)	0.000
Uncircumcised			1.00	
Father's Intention to circumcise?				
Yes			9.32(9.02-9.64)	0.000
No			1.00	
Knowledge safe male circumcision program				

about circumcision Yes No			0.85(0.79-0.89) 1.00	0.000

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