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Understanding the process of adolescent assent for voluntary male medical circumcision in Zimbabwe: findings from a cross-sectional study

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Abstract

Background Voluntary medical male circumcision (VMMC) is a method for combination HIV prevention for adolescents > 15 years in settings with generalized epidemics. In Zimbabwe, policy currently allows VMMC in adolescents > 15 years old, but there is consideration to lower the threshold to 13 years old. There is a need to understand current practices in assent/consent, and parents' requirements for assent/consent to inform policy recommendations for the VMMC programme in lowering its age threshold.

Methods Cross-sectional surveys were conducted in September 2022 using convenience sampling among three respondent groups: uncircumcised adolescents/young men (AYM) aged 13–16 years (n = 881), circumcised AYM aged 13–20 years (n = 247), and parents of uncircumcised adolescents aged 13–16 years (n = 443). Surveys asked about VMMC knowledge, experiences with mobilisers, circumcised AYM's assent/consent experiences, and parents' preferences for assent/consent processes.

Results Knowledge of VMMC was significantly lower among younger adolescents aged 13–14 than their 15–16 year-old peers. 57% (142/247) of circumcised AYM had a one-to-one discussion with their provider before having the procedure, 32% (80/247) said they were not fully informed about VMMC prior to the procedure, and 54% (134/247) wanted more information about procedure-related pain. Over half (56%, 42/75) of circumcised AYM whose parents had not provided consent in-person for them to receive the procedure reported that their parents had never been contacted to verify consent.

Conclusions There are gaps in the current assent/consent process for VMMC in Zimbabwe. Providers should be trained to give balanced information on risks and benefits of the procedure, including potential for pain. One-on-one discussions between providers and adolescents prior to the procedure, age-appropriate counselling, and tools for providers to ascertain adolescents' understanding and ability to provide assent are essential processes, especially if the age threshold is lowered to include younger adolescents. it is also imperative to improve communication with parents, particularly to verify consent for their children has been given, per national guidelines.

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Abbreviations

AYM	Adolescents and young men
HIV	Human immunodeficiency virus
MoHCC	Ministry of Health and Child Care
VMMC	Voluntary medical male circumcision
WHO	World Health Organization

1 Introduction

Voluntary medical male circumcision (VMMC) is a key component of combination HIV prevention methods. It has been shown to be cost-effective when provided to men at risk of HIV infection (15–49 years of age)[1–7], leading to recommendations to scale-up VMMC in high HIV-prevalence countries in East and Southern Africa[8]. VMMC for adolescent males can provide partial protection from new infections through the entirety of their sexually active years[9]. Compared to VMMC for adult men, circumcision for adolescents has also been shown to have high social acceptance, fewer barriers related to sexual abstinence during post-operative period, and less pressure to resume sex with partners[9].

Zimbabwe has an HIV prevalence of 12.9% (approximately 1.23 million people)[10]. VMMC is a core part of the Zimbabwe Ministry of Health and Child Care (MoHCC) HIV prevention programme, and is supported by various non-governmental organizations which function as implementing partners facilitating service delivery and community mobilization. Community VMMC mobilisers, peer educators or health workers counsel and refer adolescents and young adults for VMMC in clinics[11].

The use of prequalified circumcision devices is recommended by the World Health Organization as an option alongside surgical circumcision. Circumcision devices may also be used in younger adolescents (aged 10–14) and since 2015, the Shang Ring collar clamp device has been on the list of WHO-prequalified circumcision devices and is approved for use in adolescents aged 13 years and older for VMMC[12]. Currently, MoHCC policy allows use of the Shang Ring for VMMC in adolescents above age 15 years.

Ability to provide informed consent, or assent, is one of the key considerations recommended by the WHO to inform use of male circumcision devices on younger adolescents. Informed consent is a fundamental principle of research ethics[13] and is a key component of high-quality VMMC services[14]. Consent in the healthcare context is defined as the voluntary agreement of an individual or their authorized representative to participate in research and/or a specific medical procedure without any coercion[13–16]. Being able to provide consent requires that the individual has full knowledge and understanding of the nature of what they are participating in and having a full understanding of the risks involved participation. To give consent, an individual must have the legal capacity to do so[15–17]; in Zimbabwe, a person aged 18 years or older can give consent (although for some health services and research studies, waivers of consent have been allowed for 16- and 17-year-olds[18]). Minors below the age of 18 years must give assent for a procedure, in addition to obtaining consent from a legal parent or guardian.

A review of literature on best practices in obtaining assent and interviews with expert ethicists identified several key components of consent and assent. These included: discussion between a healthcare provider and a minor during which the risks and benefits are discussed, and the provider assesses the minor's ability to assent/consent; ensuring the minor provides explicit agreement that is free from undue influence or coercion; and obtaining informed consent from the minor's parent or guardian[15, 16, 19–21]. However, while best practices of obtaining assent and consent are well documented, studies have found that given pressure to reach VMMC targets there may be issues with consent verification including missing consent forms, forged parent/guardian signatures, lack of awareness among parents about nature and significance of the procedure, and lack of awareness that VMMC involves HIV testing.[22–25].

To inform decision-making around a possible change in policy recommendations to allow adolescents aged 13–14 years to be circumcised using the Shang Ring, a consortium of researchers conducted studies on safety, cost-effectiveness, preference for surgical vs non-surgical devices, and capacity of adolescents to provide assent. This manuscript reports on findings regarding whether adolescents aged 13–14 years have the capacity to understand the VMMC procedure and give informed assent, what practices in assent and consent are currently occurring within VMMC programs in Zimbabwe, and preferences of parents of young adolescents in giving assent and consent.

2 Methods

2.1 Study setting

Zimbabwe is a landlocked country in sub-Saharan Africa which is divided into ten administrative provinces and a total of 62 districts. The country has a projected population of 15.1 million people[26] and 22% are adolescents and young adults[27].

2.2 Survey design

The research team drew on a literature review and previous qualitative research in Zimbabwe (data not published) to design the questionnaires. The central objective of the questionnaires was to understand the consent and assent process from the perspective of each respondent group.

For uncircumcised adolescents/young men (AYM), the questionnaire tested knowledge of risks and benefits of VMMC and probed on different elements of the process (contact with VMMC mobilisers, ability to make decisions independently of their parents, and perceptions of their parent's interest in VMMC) (Appendix 1).

For circumcised AYM, the questionnaire sought to understand how assent and consent are obtained by assessing which elements of best practice in assent occurred when they personally went for VMMC, and reflections on how they felt before, during and after the procedure. Questions also included experience with VMMC mobilisers, whether they felt mature enough to decide to get VMMC at the time, and their parents' involvement in the assent/consent processes (Appendix 2).

For parents of uncircumcised AYM, the questionnaire sought to understand preferences for how assent and consent are obtained. Questions included whether their own adolescent was mature enough to decide to get VMMC, and different ways in which parents wanted to be involved in assent/consent (Appendix 3).

2.3 Sample

Priority districts and provinces to include in the research were agreed upon with Population Services for Health (PSH), one of the VMMC implementing partners, and the MoHCC to include districts which were included in an ongoing demonstration project piloting the Shang Ring method for VMMC. Quotas were derived from proportional calculation based on the density of the population in each selected province and district.[1] Further details on eligibility criteria, sampling frame, recruitment processes, and incentives are described below.

2.3.1 Uncircumcised AYM

Screeners were administered prior to conducting the survey to ensure participants met study eligibility criteria: identifying as male, being between the age of 13–16, and self-reporting being uncircumcised. Those who selected "I had never heard of male circumcision before today" when asked about their familiarity with the term circumcision were excluded. Quotas were also set to ensure an even split of 13–14 and 15–16-year-olds.

A mix of convenience and snowball sampling was used to recruit participants. Enumerators approached potential respondents by going door-to-door in selected communities and used snowball sampling to identify additional participants. Adolescents were visited at their places of residence and, if both themselves and a parent/guardian was present, they were asked if they wanted to participate. If either the adolescent or a parent/guardian was not physically present, contact details were noted and another call set up for the interviewer to come back and visit so both assent and consent for participation could be obtained. Adolescents were interviewed separately from their parents/guardians to maintain

[1] Districts sampled include the following: Harare – Hopely, Glen Norah, Mabvuku, Mabelreign, Greendale; Manicaland: Buhera, Mutare Rural, Chikanga, Dangamvura, Murambi, Sakubva, Chitomborwizi; Mashonaland Central: Rushinga, Bindura; Mashonaland East: Seke/Mahusekwa, Beatrice, Dema, Epworth; Mashonaland West: Zvimba (Murombedzi), Norton; Bulawayo: Nkulumane, Emgawini, Cowdry Park; Midlands: Shurugwi, Gweru, Kwekwe; Matabeleland South: Magwe; Matabeleland North: Bubi.

confidentiality. Across all three surveys, recontacts were limited to a maximum of twice per individual, after which another identified potential respondent was visited.

2.3.2 Circumcised AYM

Screeners were administered prior to conducting the survey to ensure participants met study eligibility criteria: identifying as male, being between the age of 16–20, self-reporting having been circumcised within the last three years at time of interview and selecting either "Surgical" or "Shang Ring" when asked "What type of circumcision procedure was used when you were circumcised". A quota was applied to attempt to measure experiences by those who had been circumcised with different methods.

Convenience and snowball sampling were used to recruit participants. First, health facilities were consulted to provide enumerators with a list of recently circumcised boys and men to identify those who had been circumcised within the last three years to ensure better recall of the procedure and processes. VMMC mobilisers in each area were also contacted to call potential participants as they had details of adolescents who were recently circumcised, who could then reach out to study staff to participate. Once identified, each potential respondent was called upon at their home address up to two times. Respondents were also asked to refer additional participants. Adolescents were interviewed separately from their parents/guardians to maintain confidentiality.

2.3.3 Parents of uncircumcised AYM

Screeners were administered prior to conducting the survey to ensure participants met study eligibility criteria: having at least one son between the age of 13–16 years who was not yet circumcised. Those who selected "I had never heard of male circumcision before today" when asked about their familiarity with the term circumcision were excluded. Quotas were applied so that the sample consisted of a roughly even male to female ratio. Parent/child dyads were not intentionally recruited.

Convenience and snowball sampling were used to recruit participants. First, community leaders were approached to identify potential participants. Once identified, each potential respondent was called upon at their home address up to two times. Respondents were also asked to refer additional participants.

2.4 Data collection

All interviewers were trained over a 1.5-day session on the questionnaires, data collection and recruitment procedures, and ethical research practices.

Surveys were conducted between September 5–22, 2022. Trained enumerators conducted interviews face-to-face, lasting approximately thirty minutes. Respondents were given the option of completing the survey in either English, Shona, or Ndebele. Questionnaires were pre-programmed onto mobile devices, into which respondents' selection to each question was inputted. An incentive of 5 USD was sent via mobile transfer to the respondent's e-wallet for participation after interview.

Interviewers uploaded the data from their devices to a central server twice daily; quality checks were run on the data daily to identify incomplete/missing data or data entered erroneously.

2.5 Analysis

Data were managed using SPSS. We present descriptive statistics. Totals in tables may add to over 100% due to rounding.

To assess knowledge, an index score was calculated using each respondents' answers to a list of true/false statements regarding VMMC. Respondents who correctly categorised 80% or more statements were classified as "High", between 60 and 79% were classified as "Medium" and 59% or less were classified as "Low."

Table 1 Final sample

Uncircumcised AYM Province	Total n = 881	Circumcised AYM Province	Total n = 247	Parents of uncircumcised AYM Province	Total n = 443
Bulawayo	55 (6%)	Bulawayo	15 (6%)	Bulawayo	26 (6%)
Harare	168 (19%)	Harare	46 (19%)	Harare	86 (19%)
Manicaland	155 (18%)	Manicaland	36 (15%)	Manicaland	81 (18%)
Mashonaland Central	90 (10%)	Mashonaland Central	24 (10%)	Mashonaland Central	45 (10%)
Mashonaland East	110 (12%)	Mashonaland East	32 (13%)	Mashonaland East	51 (12%)
Mashonaland West	120 (14%)	Mashonaland West	43 (17%)	Mashonaland West	62 (14%)
Matabeleland South	27 (3%)	Matabeleland South	10 (4%)	Matabeleland South	13 (3%)
Matabeleland North	28 (3%)	Matabeleland North	10 (4%)	Matabeleland North	15 (3%)
Midlands	128 (15%)	Midlands	31 (13%)	Midlands	64 (14%)
Age	n (%)*	Age		n (%)	Age of uncircumcised son
13	244 (28%)	13		2 (1%)	13
14	201 (23%)	14		2 (1%)	14
15	213 (24%)	15		3 (1%)	15
16	223 (25%)	16		31 (13%)	16
		17		44 (18%)	
		18		59 (24%)	
		19		44 (18%)	
		20		62 (25%)	
Level of education				Level of education	
Primary		25 (10%)		Never attended school	4 (1%)
Secondary/A-level		195 (79%)		Nursery/pre-unit	3 (1%)
College (middle level)		21 (9%)		Primary	27 (6%)
University		6 (1%)		Secondary/A-level	291 (66%)
				College (middle level)	57 (13%)
				University	61 (14%)
When circumcised				Main source of household income	
Within last 3 months		16 (6%)		Parent/relative support	6 (1%)
Within last 6 months		41 (17%)		Farming	66 (15%)
1 year ago		106 (43%)		Private sector employment	56 (13%)
2 years ago		55 (22%)		Civil service/government	59 (13%)
3 years ago		29 (12%)		Spousal support	24 (5%)
Circumcision method				Casual work	43 (10%)
Surgical VMMC		198 (80%)		Domestic work	26 (6%)
Non-surgical device		49 (20%)		Informal sector	54 (12%)
				Business/self employed	109 (25%)

3 Results

3.1 Final sample

A total n = 1,571 people were interviewed for this study (see Table 1 for details on sample including n = 247 circumcised AYM, n = 881 uncircumcised AYM, and n = 443 parents of uncircumcised AYM.

Table 2 Knowledge index scores

Source: Uncircumcised adolescents	Total n = 881				
Age group	n	Knowledge Index—Low n (%)*	Knowledge Index—Medium n (%)	Knowledge Index—High n (%)	P-value
13 years	244	49 (21%)	136 (56%)	59 (24%)	p = .039
14 years	201	44 (22%)	111 (55%)	46 (23%)	
15 years	213	22 (10%)	130 (61%)	61 (29%)	
16 years	223	34 (15%)	125 (56%)	64 (29%)	
Source: Circumcised adolescents/young men	Total n = 247				
Age group	n	Knowledge Index—Low n (%)	Knowledge Index—Medium n (%)	Knowledge Index—High n (%)	
13–14 years	4	0 (–)	3 (75%)	1 (25%)	P = 0.6
15–16 years	34	1 (3%)	18 (53%)	15 (44%)	
17–18 years	103	1 (1%)	41 (40%)	61 (50%)	
19–20 years	106	2 (2%)	46 (43%)	58 (55%)	

*Some totals may add to over 100% due to rounding

Table 3 Information given prior to VMMC procedure

Source: Circumcised AYM	Total n = 247
Extent to which patient felt informed about circumcision before having procedure	n (%)
I felt completely informed about the circumcision process	167 (68%)
I felt that I needed a little more information about the circumcision process before agreeing to take part	45 (18%)
I felt that I needed a lot more information about the circumcision process before agreeing to take part	32 (13%)
I felt completely uninformed about the circumcision process	3 (1%)
Would have liked more information about pain prior to consenting for VMMC procedure	
Yes	134 (54%)
No	113 (46%)
Which of the information sources on circumcision procedure was available/in use at the clinic*	
One-on-one discussion	142 (57%)
A pamphlet/written information	104 (42%)
Group discussion	93 (38%)
Video	11 (4%)
Other/ Prefer not to say/ None	6 (2%)
Had opportunity to ask healthcare provider a question in private before VMMC procedure	
Yes	211 (85%)
No	36 (15%)

*Participants could select more than one response

3.2 VMMC knowledge

Knowledge among uncircumcised adolescents between 13–16 years old was significantly difference ($p = 0.039$), with older adolescents (15 and 16 years old) having higher knowledge scores than their 13- and 14-year-old peers (Table 2). There was no significant difference between knowledge scores among circumcised adolescents and young men.

3.3 Information including discussion of risks and benefits given prior to procedure

Circumcised AYM described their experiences of being given information prior to having VMMC (Table 3). Approximately two-thirds of AYM (68%) felt completely informed about the circumcision process before having the procedure, while the remaining third (31%) felt that they needed either a little or a lot more information about the circumcision process before agreeing to take part. 54% of circumcised AYM would have liked more information about pain experienced during the process, prior to consenting for VMMC. The most common sources of information that reported to be available or in use at the clinic were one-on-one discussions (57%), a pamphlet or written information (42%), or a group discussion at the clinic (38%). 85% of circumcised AYM had the opportunity to ask the doctor/nurse questions privately before their procedure, whilst 15% did not.

3.4 Feeling "pressure" to circumcise

Whilst 84% of parents believe that most eligible males should go for VMMC, only 4% of uncircumcised AYM say that their parents place pressure on them to get circumcised.

Circumcised AYM described their experiences with VMMC and peer mobilisers, and their impact on their decision to circumcise; uncircumcised AYM discussed comfort with and preferences for mobiliser contact (Table 4). Among circumcised AYM, 76% were contacted by a VMMC mobiliser and 56% were contacted by a peer mobiliser about having VMMC. Among those who were contacted by either a VMMC or peer mobiliser, 30% (58/197) felt that the mobiliser had either complete or a lot of influence on their decision to circumcise, while 38% (75/197) reported the mobiliser had some influence on their decision and 31% reported that the mobilisers had very little to no influence on their decision. 68% of circumcised AYM had not yet made the decision to circumcise after their first contact with the mobiliser—among these, mobilisers most often contacted them about circumcision a further 2–3 times (46%, 62/134) following that first interaction. 25% (33/134) were contacted an additional 4 or more times. The majority (83%, 111/134) were followed up with at school. 66% of all uncircumcised AYM completely agreed that contact from the mobiliser was completely wanted and respectful; while 21% felt that mobilisers were pushy.

When uncircumcised AYM were asked about their preferences for VMMC mobiliser contact, two-thirds (66%) felt comfortable being followed up on their decision, while 34% were not comfortable. The most preferred method of contacts amongst uncircumcised AYWM were via phone calls (46%).

3.5 Assent and consent experience

Circumcised AYM who were under 18 years old at the time of VMMC described their experiences being given a consent form for their parents to sign, which should have been mandatory for all at the time of the procedure (Table 5). Overall, 88% of circumcised AYM were circumcised with a signed parental consent form in possession of the clinic, 12% (10/82) were circumcised without clinic staff being in possession of a signed parental consent form (Fig. 1).

To understand assent and consent procedures more broadly, all circumcised AYM described their experiences (Table 6). 95% of all circumcised AYM were asked to sign their own personal permission form before having VMMC, and 82% were given a signed copy of the paperwork to keep. A minority (15%) of circumcised AYM had their parents accompany them to the clinic for VMMC. Of these, 68% (26/38) reported their parents were given the opportunity to ask questions before the procedure. For the 85% of circumcised AYM whose parents did not accompany them to the clinic, only 44% (91/209) reported that their parent was visited or contacted to confirm they had given permission for their child to have VMMC.

Parents of uncircumcised AYM also described their preferences for giving assent and consent for VMMC (Table 7). 37% wanted another adult besides a healthcare provider to accompany their child when they went for VMMC. If they are not able to be at the clinic, the majority (86%) of parents completely agreed they would like a phone call from a healthcare provider to

Table 4 Experiences with and preference for mobiliser contact

Source: Circumcised AYM	n/base (%)
Were patients ever contacted by a VMMC mobiliser? *Denominator: All circumcised AYM*	
Yes	187/247 (76%)
No	60/247 (24%)
Were patients ever contacted by a peer mobiliser? *Denominator: All circumcised AYM*	
Yes	138/247 (56%)
No	109/247 (44%)
Extent to which VMMC mobiliser influenced decision to circumcise *Denominator: Circumcised AYM contacted by a VMMC and/or peer mobiliser*	
Complete influence	13/197 (7%)
A lot of influence	45/197 (23%)
Some influence	75/197 (38%)
Very little influence	42/197 (21%)
No influence	22/197 (11%)
Decided to get circumcised straight after first contact with mobiliser *Denominator: Circumcised AYM contacted by a VMMC and/or peer mobiliser*	
Yes	63/197 (32%)
No	134/197 (68%)
Number of times contacted by mobiliser about circumcision after first contact *Denominator: Circumcised AYM who had not yet decided to get circumcised after first mobiliser contact*	
Once	39/134 (29%)
2–3 times	62/134 (46%)
4–5 times	16/134 (12%)
6 or more times	17/134 (13%)
Manner(s) of contact patient had after first visit from mobiliser?* *Denominator: Circumcised AYM who had not yet decided to get circumcised after first mobiliser contact*	
Visited at school	111/134 (83%)
Visited at home	19/134 (14%)
Phone call	12/134 (9%)
Other	1/134 (1%)
Extent to which agreed that contact from mobiliser was wanted and respectful *Denominator: All circumcised AYM*	
Completely agree	131/247 (66%)
Somewhat agree	12/247 (6%)
Neither agree nor disagree	7/247 (4%)
Somewhat disagree	4/247 (2%)
Completely disagree	43/247 (22%)
Source: Uncircumcised AYM	**n/base (%)**
Comfortable with a VMMC mobiliser following up on their decision to circumcise *Denominator: All uncircumcised AYM*	
Yes	579/881 (66%)
No	297/881 (34%)
Preference for contact* *Denominator: All uncircumcised AYM*	
Phone call	267/881 (46%)
In person, at home	227/881 (39%)
WhatsApp or text	186/881 (32%)
In person, at school	178/881 (31%)
Other	6/881 (1%)

Table 4 (continued)

*Participants could select more than one response

Table 5 Assent/consent experience, circumcised AYM who were under 18 at time of circumcision

	n/base (%)
Given consent form for parent to sign *Denominator: Circumcised AYM under 18 at time of circumcision*	
Yes	79/82 (96%)
No	3/82 (4%)
Parent signed consent form *Denominator: Circumcised AYM under 18 at time of circumcision + given a consent form for parent to sign*	
Yes	73/79 (92%)
No	3/79 (4%)
Prefer not to say	3/79 (4%)
Returned signed parental consent form to clinic *Denominator: respondents under age 18 at time of circumcision + given a consent form for parent to sign*	n = 73
Yes	72 (99%)
No	1 (1%)

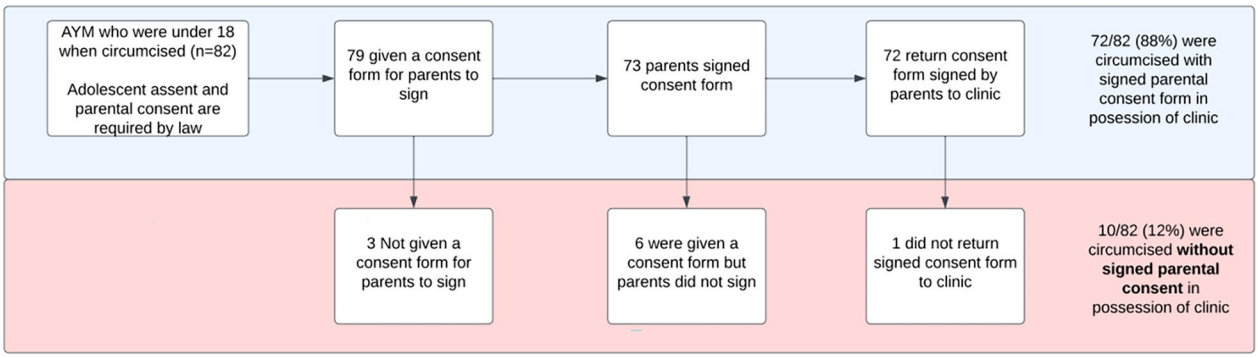

Fig. 1 Assent/consent experience, circumcised AYM who were under 18 at time of circumcision

verify consent once their son gets to the clinic, and 88% completely agree they would like their son to sign a form to confirm their assent to the procedure at the clinic prior to having VMMC.

4 Discussion

In this research we integrated data from three surveys with uncircumcised AYM and their parents, and circumcised AYM in Zimbabwe to gain a better understanding of the assent and consent processes occurring as part of the VMMC programme. We have identified several gaps in the assent/consent process which must be addressed, particularly if VMMC services are to be expanded to include a wider group of minors who must provide both informed assent and parental consent. These include ensuring sufficient information is being provided particularly to younger adolescents, further examining the role of mobilisers and their influence on decision-making and ensuring that national guidelines for obtaining assent and parental consent are being followed. However, we note that as convenience sampling methods were used the findings should not be taken as representative of the population but as providing insight into the experience of respondents in our sample.

Table 6 Assent/consent experience, all circumcised AYM

	Total n/base (%)	13–17 n/base(%)	18–20 n/base (%)
Asked to sign their own personal permission form *Denominator: All circumcised AYM*			
Yes	234/247 (95%)	77/82 (94%)	157/165 (95%)
No	13/247 (5%)	5/82 (6%)	8 (5%)
Given paperwork/signed copy to keep *Denominator: All circumcised AYM*			
Yes	202/247 (82%)	63/82 (77%)	139/165 (84%)
No	45/247 (18%)	19/82 (23%)	26/165 (16%)
Parents came with them to the clinic for VMMC procedure *Denominator: All circumcised AYM*			
Yes	38/247 (15%)	11/82 (13%)	27/165 (16%)
No	209/247 (85%)	71/82 (87%)	138/165 (84%)
Parents were given opportunity to ask questions before the procedure *Denominator: Circumcised AYM whose parents accompanied them to the clinic for VMMC*			
Yes	26/38 (68%)	7/11 (64%)	19/27 (70%)
No	11/38 (29%)	3/11 (27%)	8/27 (30%)
Don't know	1/38 (3%)	1/11 (9%)	-
Parent was visited/contacted to confirm they had given permission for child to have VMMC *Denominator: Circumcised AYM whose parents did not accompany them to the clinic for VMMC*			
Yes	91/209 (44%)	37/71 (52%)	54/138 (39%)
No	84/209 (40%)	24/71 (34%)	60/138 (43%)
Don't know	34/209 (16%)	10/71 (14%)	24/138 (17%)

4.1 Knowledge

VMMC campaigning has been ongoing in Zimbabwe for over a decade and circumcised adolescents showed no significant differences in their knowledge scores by age. However, we found that younger adolescents (aged 13 and 14 years) had significantly lower knowledge scores than their older peers (aged 15 and 16 years). This suggests that among our sample there would be a need for more education regarding VMMC among younger adolescents. However, our survey only assessed knowledge of true and false statements and more research is required to further test cognitive ability of younger adolescents to provide assent, as the knowledge score may be more indicative of recall of facts that an actual understanding of VMMC or processing of information.

4.2 One-on-one discussions

While most adolescents in our sample (85%) had the opportunity to ask questions in private to a provider before VMMC, there is room for improvement in consistency and quality in information provided. One of the four pillars of medical ethics as a framework for decision making is 'patient autonomy'[28, 29]. A crucial part of instilling agency and patient autonomy is ensuring transparency of information about the decision being made. The participants in our research expressed desire for more information about VMMC, particularly about the pain associated with the procedure. Previous research has shown that fear of pain associated with VMMC is a deterrent for many[30]. While safety has been established, pain is a reality of VMMC and there are risks that procedure will be painful. Providing balanced information and aligning expectations with reality is important for maintaining trust and will help adolescents to provide fully informed assent or consent to the procedure.

Table 7 Assent/consent preferences, parents of uncircumcised AYM

	Total n/base (%)	Son age 13–14 n/base (%)	Son age 15–16 n/base (%)
Would like a phone call from a healthcare provider to verify consent once son gets to clinic without me *Denominator: All parents of uncircumcised AYM*			
Completely agree	379/443 (86%)	247/293 (84%)	132/150 (88%)
Somewhat agree	21/443 (5%)	12/293 (4%)	9/150 (6%)
Neither agree nor disagree	13/443 (3%)	11/293 (4%)	2/150 (1%)
Somewhat disagree	6/443 (1%)	6/243 (2%)	-
Completely disagree	24/443 (5%)	17/243 (6%)	7/150 (5%)
Would like son to sign a form to confirm their assent to the procedure at the clinic prior to VMMC *Denominator: All parents of uncircumcised AYM*			
Completely agree	392/443 (88%)	257/293 (88%)	135/150 (90%)
Somewhat agree	28/443 (6%)	20/293 (7%)	8/150 (5%)
Neither agree nor disagree	9/443 (2%)	8/293 (3%	1/150 (1%)
Somewhat disagree	5/443 (1%)	3/293 (1%)	2/150 (1%)
Completely disagree	9/443 (2%)	5/293 (2%)	4/150 (3%)
Want adult to accompany their son to the clinic during their procedure *Denominator: All parents of uncircumcised AYM*			
Yes	166/443 (37%)	114/293 (39%)	52/150 (35%)
No	267/443 (60%)	173/293 (59%)	94/150 (63%)
Don't know / Prefer not to say / Other	10/443 (3%)	6/293 (2%)	4/150 (2%)
Who would parent want to accompany their son to the clinic for circumcision? *Denominator: Parents who would like an adult to accompany their son during their procedure*			
Me or my partner	105/166 (63%)	70/114 (61%)	35/52 (67%)
Another adult could be there	61/166 (37%)	44/114 (39%)	17/52 (33%)

One-on-one conversations are also important to balance information provided by VMMC mobilisers, who may have to work toward ambitious targets and combine individual and group sessions for expediency to reach more people, potentially reducing client understanding of critical wound care instructions 25. Adolescents may also feel less comfortable asking questions in a group setting: for example, one study in Eswatini found that in group counselling sessions adolescents were less engaged and did not want to ask questions for fear of looking stupid, but were comfortable in one-on-one settings31. Therefore, ensuring an opportunity for a private conversation between patient and provider before the procedure is an important part of the assent/consent process.

4.3 Explicit agreement free from undue influence or coercion

Previous research has documented that in pursuit of ambitious targets, healthcare workers may compromise quality of services, and VMMC mobilization programmes may use incentives which have been found to drive involvement31. The respondents in our study reported that VMMC mobilisers had a large presence, particularly in schools. Our respondents also described being routinely followed up with, which they did not always want. Answers from uncircumcised AYM in our sample similarly indicate that contact from mobilisers was always desired. While our sample is not wholly representative of the adolescent male population in Zimbabwe, it provides an indication that providing mobilisers need to be respectful of adolescents and give them clear opportunities to either opt out of follow-up altogether, or provide alternative means of follow-up per their comfort. Further research with representative sampling should be done to explore this further and determine the true frequency and characteristics of mobiliser contact so that issues can addressed if needed.

4.4 Parent/guardian informed consent

For those under the age of 18 years old at the time of VMMC, written parental or legal consent is a legal requirement. Should the parent not attend the clinic with the minor, the clinic should call their parent by telephone and verify that the signature is the parent or guardian's. A record of the written consent should be maintained and stored by both the client and the clinic. However, our research found that for minors who were circumcised, only 79% were given a signed form to keep as a record. Additionally, only 44% of adolescents in our sample who attended the clinic without a legal guardian reported that the clinic called a parent to verify consent. There is clearly room to strengthen and standardise the process of gaining and storing legal consent. Parents should also be able to ask questions of healthcare workers before agreeing to sign a consent form, as well as be given information on how best to support their child through the healing process. The consent process should be standardised to ensure consistency of ethical application.

Assent should be viewed an ongoing discussion and process with many opportunities for the adolescent to ask questions and for the provider to ensure they fully understand the procedure. Creating a comprehensive communication tool, such as a checklist or summaries on the benefits and risk can strengthen clients' decision-making abilities during the informed consent process32, while standardizing providers' approach and minimising added cognitive load and responsibility.

4.5 Limitations

There are limitations to this research which should be addressed. First, we employed a mix of snowball and convenience sampling to recruit participants for this research which is a technique more commonly used in qualitative research. We employed these methods because we need to recruit adolescents who had been recently circumcised as well as those who had been recently circumcised using a specific method (e.g., Shang Ring) in several priority districts for Shang Ring implementation. We also employed convenience sampling to recruit uncircumcised boys and parents of uncircumcised boys. We recognise that this recruitment method limits the generalisability of our findings to the broader population. Another limitation is that as cross-sectional research, we can only report on stated attitudes or experiences at one period in time. Parent/child dyads may have been recruited but were not recorded as such so we cannot provide analysis on their responses as dyads. Additionally, any self-report survey is subject to potential biases, such as social desirability bias, especially when discussing highly personal matters such as sexual health.

5 Conclusion

This research seeking to understand the assent and consent process for adolescent VMMC identified several gaps in the process to be filled to ensure ethical best practice should the age for VMMC be lowered in Zimbabwe. These include ensuring a full comprehensive discussion of the risks of VMMC (particularly pain), as well as benefits. All clients should have an opportunity to ask questions one-on-one in a confidential environment. Health workers should be provided with standardised tools to aid them in making their own assessment of the minor's ability to make an independent decision. A record of consent from a legal guardian/ parent should be created, verified and a copy provided to the client and stored within clinics to ensure high ethical standards are being applied uniformly and consistently. All these adjustments would lead to the creation of a gold standard model of informed assent and consent in Zimbabwe which could be modelled and replicated across the continent for other healthcare services.

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Author contributions SS and KH conceived of the research. KH was responsible for acquisition of funding. SGM, RLW, SS, KH, SX, NH, DE, JR and WB were involved in data curation, supervision, and investigation. NN, BM, RLW, LB and SS led project administration. RLW, SS, RLW, NH and WB led formal analysis. RLW, NH, WB and SGM wrote the original draft. All authors reviewed and provided feedback on subsequent drafts.

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Availability of data and materials Data are available upon request.

Declarations

Ethics approval and consent to participate All participants provided both written and verbal informed consent (if age 18 +) or assent (participants aged 13–17) along with parent or guardian consent before completing the survey, in accordance with the Declaration of Helsinki. Ethical approval for this research was given by the Medical Research Council of Zimbabwe, Ref: MRCZ/A/2859.

Consent for publications Not applicable.

Competing interests The authors declare that they have no competing interests.

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