



Published in final edited form as:

Health Care Women Int. 2014 September ; 35(0): 896–917. doi:10.1080/07399332.2014.924520.

“I may not say we really have a method, it is gambling work”: Knowledge and acceptability of safer conception methods among providers and HIV clients in Uganda

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Abstract

In this qualitative study, researchers assessed knowledge, acceptability and feasibility of safer conception methods [SCM; timed unprotected intercourse (TUI), manual self-insemination, and sperm washing] among various healthcare providers (n=33) and 48 HIV clients with recent or current childbearing intentions in Uganda. While several clients and providers had heard of SCM, (especially TUI); few fully understood how to use the methods. All provider types expressed a desire to incorporate SCM into their practice; however, this will require training and counseling protocols, sensitization to overcome cultural norms that pose obstacles to these methods, and partner engagement (particularly men) in safer conception counseling.

Keywords

HIV; Safer conception methods; Uganda; Providers; Patients; Childbearing/ pregnancy; Preconception counseling; Risk reduction strategies

In this manuscript, researchers have integrated perspectives from both providers (HIV, Family Planning and Traditional Health) and HIV patients regarding knowledge and acceptability of three safer conception methods (timed unprotected intercourse, self-manual insemination and sperm washing). We describe current efforts in the absence of clear guidelines, training, or adequate resources. These findings are relevant for an

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Author Contributions: Drs. Finocchario-Kessler, Wanyenze, and Wagner contributed to the conceptualization, data collection, analysis and writing of the manuscript. Dr. Mindry lead the data analysis process. Drs. Goggin, Mindry, and Beyeza-Kashesya contributed to the conceptualization, data collection, and editing of this manuscript. Dr. Nabiryo assisted in the data collection and provided editorial feedback on the manuscript.

interdisciplinary international audience given the intersecting domains of HIV prevention and treatment, sexual and reproductive health, health policy, and human rights in the context of culturally sensitive behaviors, stigma, poverty, and gender inequality. This topic of safer conception is both timely and relevant given challenges faced in many African countries to balance the strong value placed on childbearing and the risks of HIV acquisition or transmission.

The childbearing desires and intentions among women and men living with HIV, and the multitude of factors that influence reproductive decision making have been well summarized in recent review articles (Hoyt et al., 2012; Nattabi et al., 2009). Researchers in Uganda indicate that between 28–59% of people living with HIV (PLHIV) want to have a child in the future (Beyeza-Kashesya et al. 2010; Kakaire et al., 2010; Wagner et al., 2012). The cultural value of children, the role of parent as integral to one's adult identity, and relationship dynamics present strong motivators for childbearing (Nattabi et al., 2009). Expanded coverage of antiretroviral therapy (ART) for treatment and prophylaxis during pregnancy has led to a decline in mother-to-child transmission from 31% in 2009 to 21% in 2011 in Uganda (UNICEF, 2012), but risk of horizontal transmission in the context of conception remains prominent. With approximately half of PLHIV in serodiscordant partnerships (Uganda MOH, 2011), most new infections occur in the context of stable relationships (Allen et al., 2003). High pregnancy rates among PLHIV (Uganda Bureau Statistics, 2012) indicate the need for effective contraception and safer conception methods (SCM) that can play a critical role in reducing new HIV infections (Hoyt et al., 2012; Matthews et al., 2012).

Methods to reduce HIV transmission to uninfected partners during attempts to conceive, or safer conception methods (SCM), range greatly in the level of technology and financial resources required (Matthews et al., 2012; Matthews & Mukherjee 2009). High-resource options such as sperm washing (female uninfected) plus insemination or in vitro fertilization (Sauer et al., 2009) are not yet a realistic option for most serodiscordant couples in sub-Saharan Africa. Low cost behavioral methods include timed unprotected intercourse (TUI) limited to peak fertility days (male or female uninfected), and manual self-insemination with partner's sperm (male uninfected), each of which has demonstrated reduced risk of acquisition and transmission of HIV (Barreiro et al., 2007; Mmeje et al., 2012).

There are also several methods that are not specific to the context of conception, but which greatly reduce sexual transmission risk. ART (and a resultant undetectable viral load more specifically) has been shown to reduce infections in serodiscordant couples by 96% (Cohen et al., 2011), and medical male circumcision decreases the risk of transmission among men by 51% (Gray et al., 2007); both of these methods, used alone or in combination with any of the above described methods can substantially reduce transmission during conception. In addition, pre-exposure antiretroviral prophylaxis (PrEP) for the uninfected partner may reduce risk during conception attempts (Vernazza et al., 2011, Thigpen et al., 2012), but its efficacy in this context has not been established, nor is it widely available in Uganda or other sub-Saharan countries at the present time. While these methods, and ART in particular, can greatly reduce transmission risk during conception, some level of risk for

transmission remains and therefore the use of these methods in combination with SCM has real value for HIV prevention.

While feasible SCM are available, successful utilization of these methods requires that providers and clients have adequate knowledge and self-efficacy to either counsel clients or apply these strategies with their partner. Unfortunately, HIV client counseling on the use of these methods is not currently being implemented in sub-Saharan Africa, or any other part of the world, as part of standard care. Researchers demonstrate an unmet need for reproductive counseling among HIV clients in Uganda (Wagner et al., 2012; Wanyenze et al., 2013), South Africa (Schwartz et al., 2012), Brazil (Finocchiaro-Kessler et al., 2012), and the United States (Mindry et al., 2013) to facilitate safer conception and childbearing, as clients who want to have children typically have no communication with their providers about how to reduce risk during conception. Furthermore, whether or not specific strategies are culturally acceptable to clients, and whether or not providers are motivated to engage clients in safer conception counseling, is largely unknown. We are unaware of any study that has evaluated the knowledge and attitudes of sub-Saharan African HIV providers and their clients regarding specific SCM.

Various types of providers are positioned to inform the childbearing decisions of HIV clients. HIV providers (physicians, nurses, counselors) have ongoing periodic interactions with clients of reproductive age, while family planning (FP) providers care for referred clients (mostly female) with contraception needs. Traditional health providers (TH), in this context herbalist and traditional birth attendants, are also a common source of health services in Uganda, including services related to fertility and childbearing (Ssali et al., 2005). In this study, researchers examine the perspectives of a range of providers (HIV, FP, and TH) and PLHIV regarding their current level of knowledge, and perceived cultural acceptability and feasibility of implementing of targeted low-resource methods specific to safer conception in Uganda.

Methods

Study Setting

Researchers conducted the study between July and September of 2012 at The AIDS Support Organization (TASO) HIV care and treatment sites in the capital city of Kampala and Jinja, which is a peri-urban center about 50 km from Kampala. TASO is a non-governmental organization founded in 1987 to provide care and support for HIV/AIDS infected and affected people in Uganda. The Kampala site is located next to the Mulago National Referral Hospital and has over 6700 active clients. The Jinja site is located within the Jinja Regional Referral Hospital and it provides HIV care to over 8000 clients. In addition to ART and counseling services, TASO provides FP and contraception services at its clinics, but refers clients to FP clinics located within the same hospital complex (Jinja regional and Mulago national referral hospitals) for more specialized services. In comparison to public health clinics, TASO clinics have greater resources and more diversified staff, which allows for the provision of a wider array of services. However, the clientele served by TASO as well as public health clinics tends to be of lower socioeconomic status, as middle to high income earners typically go to private clinics.

Sample

We enrolled HIV, FP and TH providers and HIV clients to examine their perspectives on the knowledge, acceptability and feasibility of various SCM and other factors influencing provision of support for safer childbearing among HIV clients. We interviewed a mix of nurses, medical or clinical officers, counselors and 'expert clients' from the participating HIV clinics. Expert clients are PLHIV who have been trained to provide support and information to fellow PLHIV, and also serve as liaisons between providers and clients. FP providers were identified from the hospital settings in which the HIV clinics are housed, and the TH providers were identified from the communities surrounding the clinics. We stratified client recruitment by gender and eligibility criteria included being: 1) age 18 years or older, 2) in a heterosexual relationship, and 3) recently conceived (in past year) or have the intention to conceive a child in the near future (e.g., within the next year). Clients were identified through provider and self-referrals (following announcements made in the waiting room of the clinic) on a few select days designated for recruitment. Clients received 15,000 Ush (~\$6 USD) for completing the interview; providers received 20,000 Ush (~\$8 USD). All participants provided informed verbal consent. The study protocol was reviewed and approved by the Institutional Review Boards at the RAND Corporation, University of Missouri-Kansas City, and Makerere University.

Instrument

We used separate semi-structured interview guides with open-ended questions and semi-structured follow-up questions and probes to elicit themes and determine their frequency and salience among providers and clients. The interviews covered several areas related to the childbearing needs of HIV clients and the support services available to meet these needs. This analysis focuses specifically on content related to SCM to limit risk of HIV transmission to sexual partners. All respondents were asked similar questions to assess their knowledge of any SCM and perceived acceptability and feasibility of the following 3 specific SCM: 1) timed unprotected intercourse (TUI), 2) manual self-insemination for couples where the man is HIV-negative and woman is HIV-positive; 3) sperm washing for couples where the man is HIV-positive and the woman is HIV-negative. Since some of the safer conception methods are relevant to couples depending on the HIV status of specific members of the couple, client participants were asked to respond to the questions hypothetically rather than with regard to their relationship with their current partner. Highly trained, Master's degree level interviewers conducted client and traditional health provider interviews in Luganda. HIV and FP provider interviews were conducted in English by senior study investigators. Interviews generally took 30–45 minutes to administer, with client interviews conducted at the clinic, and provider interviews conducted at the respondent's work place.

Analysis

We used descriptive statistics to characterize the sample population and quantify provider and client knowledge of SCM. Interviews were digitally recorded, translated into English (when conducted in Luganda) and transcribed verbatim. We conducted content analysis to identify themes, using a staged technique described by Bernard and Ryan (Bernard, 2010).

We used *ATLAS.ti* software to mark contiguous blocks of transcript text that pertained to the major topical domains of interest. We then pulled out all text associated with a particular domain and created subthemes within each primary code or domain. Two team members each coded all content within ten interviews to assess whether both were coding the content equivalently and to reach consensus where there was any disagreement (Bernard, 2009); the remaining interviews were divided between the two team members and coded.

Results

The sample included 33 providers, consisting of 18 HIV (4 medical or clinical officers, 3 nurses, 7 counselors, 4 expert clients), 10 FP (7 midwives, 1 nurse, and 2 doctors), and 5 TH providers (3 herbalists, 2 traditional birth attendants). Eight of the providers were male, and all but 5 had been providing care for at least 4 years. Forty-eight clients participated; half (n=24) were male, mean age was 37 years, 33 (69%) were on ART, and 38% reported their partner's serostatus was discordant or unknown (see Table 1).

A. Knowledge of Safer Conception Methods

When prompted with specific types of SCM, the majority of providers reported that they had heard of one or more of the methods highlighted in this study (TUI, manual self-insemination, and sperm washing). Providers who claimed some knowledge of any SCM were most familiar with TUI followed by artificial insemination (even though the question was about manual self-insemination), however only 15% (n=5) could describe any method other than TUI in any detail. Among clients, 61% (n=29) had heard of one or more methods to reduce risk during conception, with 37% (n=18) able to describe any of the methods. Clients were most familiar with the concept of TUI as a method they had been counseled on or had employed, while awareness of either artificial or manual self-insemination was largely attributed to radio advertisements and communication with other clients. We highlight below qualitative data reflecting providers' and clients' level of knowledge of each of the targeted SCM. Quantitative summaries of SCM knowledge are presented in Table 2.

Timed Unprotected Intercourse

Provider knowledge of TUI: Among HIV providers, 95% (17/18) were aware of the method of strategically limiting unprotected intercourse to the few days each month that the woman is ovulating and thus most fertile to maximize the likelihood of conception, while minimizing the risk of HIV transmission, and 56% (10/18) could describe key elements of the method. Descriptions of how providers counsel clients on the use of this method did not always explicitly emphasize consistent condom use outside of this ovulation window.

“I may not say we really have a method, but it is gambling work...I take them through their menstrual period ...to discover their ovulation time and maybe that is where they will concentrate, on that time, rather than having to hit many times with open sex (without condom) and they don't succeed.” [HIV#20, female, age 46]

Moon beads (color coded beads in the shape of a necklace) are an existing innovative method used for tracking ovulation that was referenced by both HIV and FP providers. Six of 10 FP providers illustrated their familiarity with the concept of tracking ovulation for

TUI; however, their training was oriented to targeting the fertile days to avoid sex and prevent pregnancy. Consequently, some FP providers referred to the peak ovulation days of highest conception potential as “unsafe”, given the historic application of this method as contraception, while the HIV providers referred to these days as “safe” given their focus on preventing transmission.

“The one we usually tell them about, we use the moon beads. So they can time the days when the madam is unsafe. That is why they have to control the number of [times of] intercourse.” [FP#26, female, age 56]

“We generally use condoms, and if you are set and want a baby, you know the safe days. Since you don't need a whole month to make a baby, we teach them about the safe days, with moon beads...then other days use a condom.” [HIV#13, female, age 55]

Only one of the five traditional providers demonstrated familiarity with the concept of TUI.

Client knowledge of TUI: Most clients (n=29; 60%) had heard about TUI as a strategy to reduce the risk of HIV transmission, and several could describe aspects of the method. The consensus among informed clients was that unprotected sex should be limited to a woman's most fertile days and condoms should be used in all other instances. What appeared less clear to these respondents was the length of the window period for unprotected sex, and how to consistently identify ovulation. While the first quote describes a conservative fertility window of one day, the second quote illustrates a much looser interpretation of continual unprotected sex until a child is conceived.

“He (doctor) told me that when a woman gets to the time of getting pregnant, you stop using condoms for those days [when woman is ovulating] and after doing it for only one day, you again use condoms because I have a different virus [viral strain of HIV] than my wife. This [method] is what I used the last time to get the child that I have.” [C#21, male, age 50]

“You have to be aware that with a wife, you do not use a condom when you want to have a child, since you lack the knowledge of when she will conceive.” [C#13, male, age 53]

Knowledge of how to calculate a woman's ovulation to determine when unprotected sex should occur varied among clients. Some female clients identified the importance of this knowledge and the need for training. “Sometimes we forget to know when you began [to have your period] and how to count days [until ovulation]. I also think if one is trained it would help.” [C#22, female, age 35] Clients also noted that increased physical arousal indicated ovulation. “You feel like you want to “meet” with your loved one. That is what I know, and if you go and “meet” him, you can get pregnant.” [C#2, female client, age 38] Interestingly, some of the male clients provided more specific explanations of how to track ovulation. “After 5 days of menstruating you then have to count like 7 days and it should also be before 14 days because if she goes beyond 14 days she can't get pregnant.” [C#23, male, age 35]

Many clients described counselors as the primary source for information about safer conception, and described the process and various considerations raised by the counselor regarding the plan to have a child.

“I first come to my counselor whom I inform about my intentions. She inquires of whether the man is ready to take care of me. Has he got money? Is he in need of a child? So she encourages me to come along with my husband on a given date. We go to her office and discuss it. Where he mentions that he is ready to have a baby, then I go back and have my CD4 count. In the past, once you were about 500 [CD4 count] you begin to plan to get pregnant.” [C#17, female, age 37]

Maintaining a high CD4 cell count prior to conception attempts was repeatedly reported as important to providers in terms of assessing the woman's health status,

“The counselor tells us...when the CD4 is high you can have unprotected sex when the woman is ovulating and the woman can conceive. After conception, you then go back to using condoms. But you can only do this after they check the CD4 for you and your wife to ensure that you move along as a couple.” [C#49, female, age 39]

While the importance of maintaining a high CD4 count was raised by providers as a sign of good maternal health status and lowering risks to the mother with regard to childbirth, clients talked about it specifically in the context of safer conception and transmission risk, suggesting a misconception as to value of a higher CD4 in this context.

“Because when the CD4 level is low, the chance of infecting your partner is high. When the CD4 is low the healthcare provider can advise you to hold on [wait until CD4 count rises before attempting to conceive].” [C#43, male, age 42]

Manual Self-Insemination

Provider knowledge of manual self-insemination: Although we asked specifically about manual self-insemination, many providers responded with remarks about artificial insemination, providing a general description of its process, and indicating it occurred in specialty fertility centers in Kampala. Some were familiar with the concept of insemination given its local use for animal husbandry. After clarification that we were asking about manual self-insemination, 42% (n=14) of all providers (6 HIV, 6 FP and 2 TH) mentioned having heard of self-insemination that could be accomplished at home, but only two HIV and one FP provider could actually provide any level of description. One provider shared a success story from a serodiscordant couple for whom he cared.

“There is a very nice model couple. The man is negative, the woman is positive, but somehow they agreed and used a very local method of getting a sterile syringe and getting semen from the condom and the woman injected herself. And as we talk, she's pregnant.” [HIV#17, female, age 35]

Other providers acknowledged that this method is not included in guidelines or part of standardized care, and that it was questions from their clients that often prompted their awareness of this option. Several commented on the lack of data regarding the effectiveness

of the method to prevent transmission or achieve pregnancy, resulting in their reluctance to inform their clients of the method.

“Actually we are getting those testimonies from them [clients]. But we don't know how perfect it is|but they always want to inquire from us if that is the right thing to do. ...we don't have the correct answer to tell them. They may read on the internet so they come and tell us this is what we found out so we are going to practice that. We don't know how effective it is. I've never got anyone telling me the results of using a syringe. I think it fails.” [HIV#4, female, age 37]

“We don't know how safe it is. Yeah, we rarely talk about it.talk about things we are not sure of. So we just know that that kind of thing is there. Maybe some of them [patients] know, but we don't bring it up during our sessions.” [HIV#5, female, age 30]

One provider [HIV provider, HIV#2, female, age 46] expressed concern that the use of the syringe might damage the sperm and result in birth defects and malformations.

Client knowledge of manual self-insemination: Similar to providers, many clients had heard of artificial insemination or were familiar with the concept from radio advertisements, the internet, communication with other patients, or due to its application in animal husbandry. But few clients (n=13, 27%) were aware that manual insemination could be performed at home by the couple.

“I have heard about that method, but I didn't know whether it's applicable in such a way [performed by couple at home]. I know it's done in specialized hospitals or anywhere else where they can get your sperm.” [C#24, male, age 28]

Only four clients were able to demonstrate some knowledge of the method, and one client actually described how self-insemination works, that it applies to couples where the man is uninfected, and talked about the training she received from counselors at a nearby research unit within the larger hospital complex.

“They [counselors at research project] taught us, after having sex, and the man has ejaculated in the condom. He pours his semen into the woman. If you use that, you can conceive, and that is when he is not positive.” [C#7, female, age 30]

Sperm Washing

Provider knowledge of sperm washing: While some HIV (67%) and FP (20%) providers had heard of the term 'sperm washing', most could not describe in any detail what the procedure entailed, and none of the TH providers had heard of the procedure. One provider referred to a new fertility center in Kampala, and described his understanding of sperm washing, saying,

“I heard that men who have weak sperms in contaminated semen can have them washed, energized, given nutrients and injected in the woman.” [HIV#6, male, age 44]

The most precise description was as follows,

“I just heard about it, I have not confirmed that it's really very true or possible. They say it can be done medically where they just pick out the sperm and then do artificial insemination, because the virus is not in the sperm, but it is in the semen.”
[HIV#8, female, age 35]

Client knowledge of sperm washing: Few clients (n=11; 23%) had heard about sperm washing, and those who had reported fellow clients, the radio, and newspapers as sources of information. Only 4 respondents could provide at least a partial description of the process. Several clients described the process of taking sperm from the man that would be inserted in the woman (insemination), but only two made clear the distinction of washing or treating the sperm first, yet still evidence misunderstanding of the process.

“They can put medicine on them [sperm]; and later the woman can have them. I think that can also help to reduce the HIV infection.” [C#17, female, age 37]

“According to the small knowledge I have, it might be effective because I think sperms are not concentrated with HIV. If they are withdrawn and given to an HIV negative woman, it's a sure deal that she will remain negative.” [C#51, male, age 24]

One client expressed concern that sperm washing could negatively impact birth outcomes or result in deformities. [C#11, female, age 33]

Other safer conception strategies mentioned by clients—Some male and female clients mentioned misconceptions about the benefits of avoiding rough sex that might bruise or wound the partner, and talked about ‘romancing’ their partner before intercourse to facilitate natural lubrication to reduce entry points for HIV transmission. These themes were reportedly included in counseling sessions and workshops for discordant partners.

“The method is to avoid forced sex. You have to agree and ensure that you don't have any wound and this can help to prevent re-infections.” [C#34, male, age 35]

“It is what I meant about carefully romancing your wife before sex. It can help both the woman and man not get infected. [C#26, male, age 34]

Male circumcision was mentioned as a way to further reduce transmission to uninfected male partners, “Circumcised men rarely get HIV and I think if they use this method [TUI] they can prevent being infected.” [C#4, female, age 34]

One client suggested the use of post-exposure-prophylaxis (PEP) for an uninfected partner in a serodiscordant relationship after timed unprotected sex to conceive a child. Another patient talked about the use of pre-exposure prophylaxis (PrEP), mentioning the medication by name.

“If one partner has been on drugs for a longer period, there is a drug called TRUVADA that a [HIV] negative person takes to prevent infection.” [C#23, female, age 36]

Both providers and clients mentioned the need for training to increase their knowledge of SCM and practical guidance on how to implement them at both the clinic and community levels.

“I like the way you are telling me about these new things. I don't know if you have recorded them like on a CD, like really what happens when you use the syringe so that people look at how it is done. So I don't know if these things are there, but I want some reading materials.” [HIV#2, female, age 46]

“It would really help if you go into the communities and train people about it [SCM].” [C#37, male, age 37]

B. Perceived Acceptability and Feasibility of Safer Conception Methods

Most providers and clients felt TUI was feasible because it draws on the existing practice of tracking ovulation, can be accomplished in the privacy of one's home, and does not cost money. Once the distinction between manual self-insemination (at home) vs. artificial insemination (provider-facilitated at a clinic) was made clear, there was increased support for this method. Manual self-insemination was perceived as far more feasible for couples given the low cost of materials (syringe) and the ability to implement this at home. Thus, TUI and manual self-insemination were considered feasible options *if* providers and couples have appropriate training and support. All participants aware of sperm washing and artificial insemination discussed the cost as a significant barrier for the majority of Ugandans and nearly all clients at TASO.

While options that allow clients to protect their partners and conceive a child were welcomed by nearly all participants, cultural and religious objections to alternative (and thus seen as abnormal) conception strategies reduce the acceptability of these methods for some. This section is organized by common concerns regarding the acceptability and feasibility of SCM expressed by providers and clients that may apply to one or more of the discussed methods.

Securing partner support—Partner support and couple cooperation were seen as integral to the success of these methods by both providers and clients. This begins with the initial step of coming for counseling together as a couple to facilitate open communication and planning for safer conception. “The counselor has to seat the two of you; because if I only tell one of the couple, the other person will not have received the adequate information about what should or shouldn't be done.” [C#44, female, age 32]

Open communication about sex and planning pregnancy among couples is not common, yet will be necessary to effectively implement SCM. “Let me say 70% [of couples] lack communication, yet when you and the woman do communicate, you can discuss this method and it can work for you.” [C#15, male, age 33] The level of commitment between serodiscordant partners influenced willingness to pursue SCM rather than abandoning the relationship. “It also depends on the kind of relationship that exists—you need to understand and love each other. Then, it also depends how long you have lived together. Otherwise if you have just met, you just have to separate [instead of use that method].” [C#29, female, age 32]

Recognizing the cultural context and challenge for women to insist on SCM without support of their partners, providers and clients discussed the difficulty for women to regulate and limit which days of the month they have unprotected sex.

“The problem [is] their husbands. Unless they come with their husband here to be told and they know what to do. Since they [husbands] are the head of the house, they don't want to go on women's commands. But I think if men are cooperative, you bring those men, we talk to them. I think they can do.” [FP#3, female, age 48]

“I think the method is good, but the challenge is men who are not consistent with condoms. He can use it today and the next time refuse to use it. This puts you in danger of reinfection, you see.” [C#22, female, age 35]

Some women expressed the fear of losing their partner if they refused unprotected sex and pressed their partner to use SCM. “I can accept it if I want to have a child, but you can't convince the men [to ejaculate into a cup]...the man can decide to get another partner of unknown status who they can have children with. If he sees that you don't want to have unprotected sex with him, he would go.” [C#4, female, age 34]

As one client noted, “The cause of most family violence is due to disagreements about when they [couple] should and should not have sex.” [C#9, male, age 49] Thus, emphasizing the need to engage male partners in counseling and to empower women without increasing their risk of violence. While these methods may challenge some cultural norms about sexual decision-making, there are men interested in using these methods, “For a man who has an upright thinking, a man who is not interested in passing on the virus to his wife, I believe they will also welcome it, because there are men who are interested in having children, but their fear is how to do it [safely].” [HIV#3, male, 38]

Non-traditional conception—Client responses validated providers' concerns that sperm washing plus artificial insemination deviated too far from normal conception practices, and thus were unacceptable to some.

“Although it prevents infection, there is no enjoyment like the natural way of a man ejaculating directly into the vagina when you are all still hot. When you use that method [sperm washing plus artificial insemination], the sperm is inserted into you when it's cold and that is not good. Then also I think the child who is born using this method is not like a real child.” [C#31, female, age 23]

Questions regarding paternity were also raised as a potential challenge with clinic-based methods to achieve conception. The strong preference for conceiving the traditional or ‘natural’ way was also expressed.

“You know depending on our cultures, for a woman to go and have artificial insemination, later the man may not accept that is actually HIS child. He might think that in the laboratory they changed and put another man's sperm into his wife. Catholics believe so much in doing things the religious way, the Godly way. The natural way.” [FP#7, female, age 34]

Careful efforts to ensure confidence in the clinic-based processes will be important to ensure the trust of clients. “It would be very important that they do it when both of us are present as a couple, [rather] than drawing my sperms and leaving it in the hospital and then my wife goes to get it, because the doctor can accidentally get someone else's sperm.” [P#30, male, age 58]

Participants expressed concern that masturbation or assisted ejaculation may pose a challenge, as it is not frequently part of sexual relationships; however, they felt education and sensitizing people could help change social norms regarding masturbation for the purpose of safer conception.

“Perhaps it [manual self-insemination] can help, but how do you tell a man to withdraw and ejaculate into a cup? (laugh) Because there are men who can't really be convinced. I really see it's hard.” [C#4, female, age 34]

“I don't even know how many men can even accept masturbation. You know with everything that has a cultural connotation around it, it really begins with sensitization. If you begin to sensitize the people, with time, it can take off.” [C#7, female, age 34]

Accurately tracking ovulation—The ability to accurately and consistently track ovulation (required for TUI and manual self-insemination) was noted by providers and clients; however, most providers felt this challenge could be overcome with adequate training.

“The literate easily understand and they are able, but for those who are not literate you would have to devise another method, maybe like using moon beads that could tell them the unsafe [fertile] days.” [HIV#10, female, age 30]

“Actually clients are very intelligent, if you tell a woman to follow her menstrual secretions, she is able. Many women know about these changes, it is about you directing them to what this kind of discharge stands for- many can understand. But the temperature thing [to detect ovulation] is really difficult in our setting.” [FP#7, female, age 34]

Some clients echoed the importance of training for ovulation tracking, “It needs a lot of calculations and ...we may not know how the cycle moves. We don't observe the inner organs so as to know the period. I told you that it's too scientific.” [C#51, male, age 24]

Other situations that would make accurate ovulation tracking difficult were also raised, such as irregular menstrual periods or the absence of menstruation among lactating women, which were raised by one FP provider. An HIV counselor talked about the added challenges posed by people living in extreme poverty.

“When you're needy, even those choices and luxuries of having to study your body, to know when you're on or not on [ovulating], when you're surviving, struggling to survive, that one becomes not an issue. Some people have to squat to see the kind of secretions coming out. So, it needs a very good environment- where you don't have to go outside.” [HIV#17, female, age 35]

Risk of HIV transmission—Recognizing TUI is a harm reduction strategy that only minimizes risk of HIV transmission, one HIV provider articulated her discomfort with this risk, while another explained why many patients were willing to take this risk.

“They [serodiscordant couple] might say ‘you told us only once, we might not get HIV, but now I’m positive’. You’ll carry the blame. So, anything that has a big risk, I don’t think I would sell that information. Because the chances are not 100% guaranteed that only once you can’t get [HIV].” [HIV# 17, female, age 35]

Other concerns related to the feasibility of Safer Conception Methods—One man described the frustration associated with and the patience needed to accept the delayed conception process that can result from following guidance for TUI, “The challenge I have met is thinking that she got pregnant while using timely intercourse when actually she did not get it [pregnancy] and when we wait for the next time she can get pregnant you may find that she is sick and you have to wait for yet another time.” [P#23, male, age 35]

Other concerns were raised about the implementation of manual self-insemination by male clients who were uncertain how effectively or quickly they could collect and transfer the sperm to ensure its quality. “It needs knowing the time the sperms can last because you can delay and the sperms expire. Also not every sperm can create a human being, so you can insert unproductive sperms into your wife.” [C#33, male, age 56] While costs and cultural preferences may limit the feasibility of sperm washing and artificial insemination, when asked about the expense as a barrier, one male client said, “That won’t deter them. A person can give all they have in order to have a child.” [C#13, male, age 53]

Discussion

Despite increased recognition of the reproductive rights of PLHIV (WHO, 2011), and several studies documenting childbearing desires among PLHIV and their partners (Nattabi et al., 2009), this is one of the first studies to examine the knowledge, acceptability and feasibility of SCM from the perspectives of both providers and clients. We present our findings to reveal that providers and clients often have some knowledge of TUI as a safer conception method, as this strategy is often used as part of family planning and pregnancy prevention. In comparison relatively little was known about manual self-insemination or sperm washing among providers or clients. Male and female clients expressed motivation to use safer conception strategies to protect their partner; both for the sake of the partner and so they can stay healthy to care for the client and their children. Several clients also expressed the importance of such methods for young people in serodiscordant relationships who have not yet had children.

We observed variation in the level of knowledge of SCM between the different types of providers. HIV providers had the most knowledge, particularly with regard to TUI and sperm washing, compared to both FP and TH providers. While one might expect FP providers to be at least as knowledgeable about TUI, a common FP method for timing pregnancy, it is not surprising that HIV providers had greater knowledge of sperm washing, as the nature of the procedure has specific application to couples living with HIV. Although clients in this setting seek help from TH providers when they have challenges with

conception (Kyomuhendo, 2003), TH providers had the least amount of knowledge of each of the SCM, perhaps because of the absence of formal medical training or limited access to published findings. However; like the HIV and FP providers, the TH expressed an openness and desire to learn more about these methods so that they could properly counsel and inform their clients.

Participants revealed several gaps in terms of the knowledge, practice, and policy guidance in relation to SCM among the clients and providers. Several clients and providers had heard about some of the SCM (especially timed unprotected intercourse), but could not provide a comprehensive description of how they are implemented and the clients who reported using methods exhibited partial understanding. This partial knowledge could limit the success of their attempts to conceive (e.g., failure to time or recognize the fertile period) and ultimately undermine providers and clients confidence in these methods. The partial knowledge could also increase risk of HIV transmission to uninfected partners due to extended unprotected sex beyond fertile window.

Timed unprotected intercourse and manual self-insemination were generally well received by both providers and clients as feasible options for widespread use; largely because they require little to no money and can be implemented by the couple at home. Yet even these methods pose challenges regarding the need for effective training of both providers and clients. Structured protocols need to be developed for provision of evidence-based training on SCM to empower providers to effectively guide and support their clients. Sensitization is required to overcome cultural norms that may pose obstacles to specific components of the SCM (e.g., masturbation; alternatives to “natural” routes of conception; uncertainties regarding paternity; couple communication and planning of pregnancies) as well as avoidance of judgmental or value laden counseling.

Both providers and clients (mostly female, but male clients too) spoke to the need to engage partners in the process of safer conception counseling as a prerequisite to couples being able to successfully implement SCM. Gender disparities with regard to power dynamics and decision making within couples can greatly influence the success of implementing health strategies that require the involvement of both partners (Pulerwitz et al., 2010). Men have not traditionally been involved in family planning and reproductive health service delivery, but research with HIV-affected couples has shown that the desire for children is just as strong among the men in these relationships, as female partners (Wagner & Wanyenze, 2013). Participation of men, and involvement of both partners as a couple, requires disclosure of HIV status, which can be a major barrier to implementation of any SCM. In fact, providers will likely need to assist clients with safe disclosure to their partners prior to being able to begin any couples-based safer conception counseling.

The uncertainty regarding the risk of transmission, even when SCM are correctly implemented, remains an impediment to provision of safer conception counseling for some providers. When correctly implemented, many of the SCM carry no risk of transmission. But TUI will always involve some risk, and research is needed to more clearly establish the levels of risk involved with this method under specific scenarios, including whether or not the infected partner is on ART. As ART access in Africa increases, concurrent use of ART

and SCM will further reduce transmission risk and may increase provider confidence in addressing safer conception support. Policy recommendations and guidelines from appropriate authorities, including Ministries of Health, will also reassure and encourage providers to offer safer conception counseling. Current sexual and reproductive health and prevention of mother-to-child transmission guidelines in Uganda and other countries do not address safer conception of HIV infected individuals who desire to have children (Uganda Ministry of Health 2011, Uganda AIDS Commission 2011). The only safer conception counseling guidelines that have been developed for PLHIV in sub-Saharan Africa are those published by the South African Association of HIV Providers in 2012 (Bekker et al., 2011), but these guidelines have not yet translated into routine provision of safer conception counseling in South Africa or elsewhere in the region.

This study is limited in its generalizability to non-clinic based populations and its ability to explore nondisclosure as a barrier, because nearly all enrolled clients had disclosed their HIV status to their partner. We present useful insights into the acceptance and existing knowledge gaps and concerns about SCM among providers and clients. Systematic quantitative data are needed to substantiate these qualitative findings and further elucidate the factors related to knowledge, attitudes and practices regarding use of SCM. Quantitative data illustrated in Table 2 is intended to facilitate comparisons, but should be interpreted in light of the small sample size. Accordingly, we have begun the second phase of our research which will prospectively follow a cohort of male and female HIV clients in Uganda with intentions to conceive, together with their HIV, FP and TH providers, to assess how knowledge, attitudes and practices evolve in this developing component of HIV care. In the future we plan to use data from this mixed methods study to develop and evaluate the implementation of a safer conception counseling protocol for PLHIV.

In conclusion, we found low in-depth understanding of SCM, but both providers and clients generally express a belief that low cost SCM are feasible and could be acceptable in Uganda. Implementation of these strategies in Uganda and elsewhere will require standardized guidelines and culturally appropriate training as well as sensitization to address concerns among clients and providers. As safer conception needs of PLHIV become increasingly apparent, and clinics begin to engage in efforts to inform their clients of existing options, research will be needed to examine prevalence of and barriers to utilization of specific SCM so as to inform the development of effective training and counseling programs.

Acknowledgments

This study was supported by R01 HD072633. We acknowledge the extraordinary efforts of the providers, interviewers (Joseph Kyebuzibwa and Jacque Nakitende), and all of our colleagues at TASO Jinja and TASO Mulago who assisted in this study.

References

- Allen S, Meizen-Derr J, Kautzman M, Zulu I, Trask S, Fideli U, et al. Sexual behavior of HIV discordant couples after HIV counseling and testing. *AIDS*. 2003; 17:733–740. [PubMed: 12646797]

- Barreiro P, Castilla JA, Labarga P, Soriano V. Is natural conception a valid option for HIV-serodiscordant couples? *Hum Reprod.* 2007; 22:2353–2358. [PubMed: 17640945]
- Bekker LG BV, Myer L, Rees H, Cooper D, Mall S, Mnyami C, Conradie F, Mahabeer I, Gilbert L, Schwartz S. Guidelines on Safer Conception in Fertile HIV-Infected Individuals and Couples. *Southern African Journal of Medicine.* 2011; 12:31–44.
- Bernard, HR.; Ryan, GW. *Analyzing qualitative data: Systematic approaches.* Sage Publications; Thousand Oaks, CA: 2010.
- Beyeza-Kashesya J, Ekstrom AM, Kaharuzza F, Mirembe F, Neema S, Kulane A. My partner wants a child: a cross-sectional study of the determinants of the desire for children among mutually disclosed sero-discordant couples receiving care in Uganda. *BMC Public Health.* 2010; 10:247. [PubMed: 20465794]
- Cohen MS, Chen YQ, McCauley M, Gamble T, Hosseinipour MC, Kumarasamy N, et al. Prevention of HIV-1 infection with early antiretroviral therapy. *N Engl J Med.* 2011; 365:493–505. [PubMed: 21767103]
- Finocchiaro-Kessler S, Bastos FI, Malta M, Anderson J, Goggin K, Sweat M, et al. Discussing childbearing with HIV-infected women of reproductive age in clinical care: a comparison of Brazil and the US. *AIDS Behav.* 2012; 16:99–107. [PubMed: 21359541]
- Gray RH KG, Serwadda D, Makumbi F, Watya S, Nalugoda F, et al. Male circumcision for HIV prevention in men in Rakai, Uganda: a randomised trial. *Lancet.* 2007; 369:657–666. [PubMed: 17321311]
- Hoyt MJ, Storm DS, Aaron E, Anderson J. Preconception and contraceptive care for women living with HIV. *Infect Dis Obstet Gynecol.* 2012; 2012:604183. [PubMed: 23097595]
- Kakaire O, Osinde MO, Kaye DK. Factors that predict fertility desires for people living with HIV infection at a support and treatment centre in Kabale, Uganda. *Reprod Health.* 2010; 7:27. [PubMed: 20937095]
- Kyomuhendo GB. Low use of rural maternity services in Uganda: impact of women's status, traditional beliefs and limited resources. *Reprod Health Matters.* 2003; 11:16–26. [PubMed: 12800700]
- Matthews LT, Mukherjee JS. Strategies for harm reduction among HIV-affected couples who want to conceive. *AIDS Behav.* 2009; 13(Suppl 1):5–11. [PubMed: 19347575]
- Matthews LT, Smit JA, Cu-Uvin S, Cohan D. Antiretrovirals and safer conception for HIV-serodiscordant couples. *Curr Opin HIV AIDS.* 2012; 7:569–578. [PubMed: 23032734]
- Mindry D, Wagner G, Lake J, Smith A, Linnemayr S, Quinn M, et al. Fertility desires among HIV-infected men and women in Los Angeles County: client needs and provider perspectives. *Matern Child Health J.* 2013; 17:593–600. [PubMed: 22562286]
- Mmeje O, Cohen CR, Cohan D. Evaluating safer conception options for HIV-serodiscordant couples (HIV-infected female/HIV-uninfected male): a closer look at vaginal insemination. *Infect Dis Obstet Gynecol.* 2012; 2012:587651. [PubMed: 22927714]
- Nattabi B, Li J, Thompson SC, Orach CG, Earnest J. A systematic review of factors influencing fertility desires and intentions among people living with HIV/AIDS: implications for policy and service delivery. *AIDS Behav.* 2009; 13:949–968. [PubMed: 19330443]
- Pulerwitz J, Michaelis A, Verma R, Weiss E. Addressing gender dynamics and engaging men in HIV programs: lessons learned from Horizons research. *Public Health Rep.* 2010; 125:282–292. [PubMed: 20297757]
- Sauer MV, Wang JG, Douglas NC, Nakhuda GS, Vardhana P, Jovanovic V, et al. Providing fertility care to men seropositive for human immunodeficiency virus: reviewing 10 years of experience and 420 consecutive cycles of in vitro fertilization and intracytoplasmic sperm injection. *Fertil Steril.* 2009; 91:2455–2460. [PubMed: 18555235]
- Schwartz SR, Mehta SH, Taha TE, Rees HV, Venter F, Black V. High pregnancy intentions and missed opportunities for patient-provider communication about fertility in a South African cohort of HIV-positive women on antiretroviral therapy. *AIDS Behav.* 2012; 16:69–78. [PubMed: 21656145]

- Ssali A, Butler LM, Kabatesi D, King R, Namugenyi A, Kamya MR, et al. Traditional healers for HIV/AIDS prevention and family planning, Kiboga District, Uganda: evaluation of a program to improve practices. *AIDS Behav.* 2005; 9:485–493. [PubMed: 16249945]
- Thigpen MC, Kebaabetswe PM, Paxton LA, et al. Antiretroviral preexposure prophylaxis for heterosexual HIV transmission in Botswana. *NEJM.* 2012; 367:423–434. [PubMed: 22784038]
- Uganda AIDS Commission. National Strategic Plan 2011/12 – 2014/15. 2011.
- Uganda Ministry of Health. The integrated national guidelines on antiretroviral therapy, prevention of mother to child transmission of HIV and infant & young child feeding. 2011.
- Uganda Ministry of Health. Uganda AIDS Indicator Survey 2011. 2011.
- UNICEF. Count Down to Zero: Elimination of New HIV Infections Among Children by 2015 And Keeping Their Mothers Alive, Uganda. 2012.
- Vernazza PL, Graf I, Sonnenberg-Schwan U, Geit M, Meurer A. Preexposure prophylaxis and timed intercourse for HIV-discordant couples willing to conceive a child. *AIDS.* 2011; 25:2005–2008. [PubMed: 21716070]
- Wagner G LS, Kityo C, Mugenyi P. Factors associated with intention to conceive and its communication to providers among HIV clients in Uganda. *Matern Child Health J.* 2012; 16:510–518. [PubMed: 21359828]
- Wanyenze RK, Wagner GJ, Tumwesigye NM, Nannyonga M, Wabwire-Mangen F, Kamya MR. Fertility and contraceptive decision-making and support for HIV infected individuals: client and provider experiences and perceptions at two HIV clinics in Uganda. *BMC Public Health.* 2013; 13:98. [PubMed: 23374175]
- WHO, UNFPA, IPPF, UNAIDS. Sexual and reproductive health and HIV/AIDS: a framework for priority linkages. 2011.

Table 1

Characteristics of Provider (n=33) and Client (n=48) Participants

	FP (n=10)	HIV (n=18)	TH (n=5)	Total (n=33)
Mean age (SD)	46.2 (9)	37.8 (7)	62.6 (13)	44.1 (12)
Female	9 (90%)	11 (61%)	4 (80%)	24 (73%)
Kampala	6 (60%)	9 (50%)	2 (40%)	15 (456%)
Jinja	4 (40%)	9 (50%)	3 (60%)	18 (54%)

	Kampala (n=23)	Jinja (n=24)	Total (n=47)
Mean age (SD)	34.5 (6)	38.5 (9)	36.6 (8%)
Female	13 (57%)	11 (46)	24 (51%)
Have 1+ children	23 (100%)	23 (96%)	46 (98%)
Mean number of children (SD; range)	3.4 (2.3; 1–9)	4.9 (3.7; 0–17)	4.1 (3.2; 0–17)
Some secondary education	11 (48%)	7 (29%)	18 (38%)
On ART	19 (83%)	18 (75%)	37 (79%)
Partner HIV status: negative/unknown	9 (39%)	11 (46%)	20 (43%)
Wants another child	21 (91%)	19 (79%)	40 (85%)

Table 2

Comparing providers and clients' level of knowledge of each safer conception method

	Timed Unprotected Intercourse			Manual Self-insemination			Sperm washing		
	None	aware	know	None	aware	know	None	aware	know
Providers									
HIV n=18	1(6)	17(95)	10(56)	12(67)	6(33)	2(11)	6(33)	12(67)	1(6)
FP n=10	4(40)	6(60)	3(30)	4(40)	6(60)	1(10)	8(80)	2(20)	1(10)
TP n=5	4(80)	1(20)	0	3(60)	2(40)	0	5(100)	0	0
Patients									
Female n=24	10(42)	14(58)	7(29)	19(79)	5(21)	2(8)	19(79)	5(21)	2(8)
Male n=24	9(38)	15(62)	11(46)	16(67)	8(33)	2(8)	17(71)	6(25)	2(8)

None= have no knowledge of the method

Aware= have heard of the method (includes those who also have knowledge)

Know= can provide at least a partial explanation of the method