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Prevalence and Correlates of Use of Safer Conception Methods in a Prospective Cohort of Ugandan HIV-Affected Couples with Fertility Intentions

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Abstract

We examined the prevalence and correlates of safer conception methods (SCM) use in HIV-affected couples with fertility intentions. A prospective cohort of 400 HIV clients in Uganda who had fertility intentions with their partner was surveyed every 6 months for 24 months. Logistic regression analysis was used to determine individual, relationship and provider level predictors of SCM use. Over one-third (35%) reported any use of timed unprotected intercourse (TUI) during the study; use of other SCM was rare. Baseline predictors of any TUI use included lower social support, greater perceived provider stigma of childbearing, greater SCM awareness, greater control over sexual decision making in the relationship, inconsistent condom use, and the belief that a desire for childbearing impedes condom use. These findings highlight the need for policy and provider training regarding integration of safer conception counselling into family planning and reproductive health services for people living with HIV.

Keywords

Safer conception; HIV; Uganda; Timed unprotected intercourse

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Compliance with Ethical Standards: Ethical approval: All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards.

Informed consent: Informed consent was obtained from all individual participants included in the study.

Introduction

A high proportion (20–50%) of persons living with HIV (PLWHIV) desire to have children in Uganda [1–3], and the larger region of sub-Saharan Africa [4–7]. In fact, upwards of 40% of HIV-infected women in sub-Saharan Africa become pregnant post-HIV diagnosis [8, 9], and in Uganda over 100,000 HIV-infected women become pregnant annually [10]. Conception in PLWHIV involves risks of HIV transmission to uninfected partners, as well as the child, and recent data suggest that 60% of HIV-affected couples in Uganda are serodiscordant [11]. There are considerable resources and support for PLWHIV who want to avoid pregnancy, and prophylactic ART for prevention of mother-to-child-transmission is widely available for those who are pregnant [12], but services to support safer conception are typically absent from family planning and reproductive health services.

Methods to reduce HIV transmission to uninfected partners during attempts to conceive, which we refer to as “safer conception methods” (SCM), range greatly in the level of technology and cost required [13, 14]. Sperm washing plus insemination and in vitro fertilization [15] are too costly to be realistic SCM options for most serodiscordant couples in sub-Saharan Africa. Low cost, behavioral SCM include timed unprotected intercourse (TUI; during only the woman's monthly peak fertility days), and manual self-insemination with partner's sperm (when male is HIV-negative), each of which reduce the risk of HIV transmission [16, 17]. Although not specific to the context of conception, ART reduces the risk of horizontal HIV transmission by 96% in serodiscordant couples when adhered to [18]. However, over half of PLWHIV in Uganda are not on ART [19], and nearly a third of those on ART have suboptimal adherence [20] and may not have adequate viral suppression to prevent transmission. Use of ART as pre-exposure prophylaxis (PrEP) or post-exposure prophylaxis (PEP) by the uninfected partner are other methods for which ART can promote safer conception, but PrEP is not yet widely available in Uganda and PEP can be accessed only at certain health facilities.

With most published research related to safer conception in PLWHIV being qualitative, our longitudinal observational study of 400 PLWHIV with fertility intentions is one of few to quantitatively examine the use of SCM in this population. Our analysis of baseline data found that just 12% reported use of TUI, and none reported manual self-insemination [21], which is similar to what was found in a study conducted in South Africa [22]. Successful use of these methods requires that clients have adequate knowledge of and self-efficacy for applying these strategies with their partner. Individual (e.g., knowledge and attitudes towards specific SCM), relationship (e.g., HIV disclosure to partner, communication and decision making dynamics), and provider (e.g., provider-client communication about childbearing desires, provider attitudes towards childbearing among HIV clients) level factors may influence SCM use [23, 24]. Indeed, our baseline findings revealed that SCM knowledge, perceived partner willingness to use SCM, and perceived provider stigma of childbearing were determinants of TUI use in multivariate analysis [21].

In this paper we report data from the completed prospective observational study, which followed participants over 24 months. We examined the prevalence of partner seroconversion, and the prevalence and correlates of SCM use over the course of the study.

The findings will help to inform interventions to increase SCM use and promote safer conception and pregnancy outcomes for PLWHIV.

Methods

Study Setting

The study was conducted at The AIDS Support Organization (TASO) HIV care and treatment sites in Kampala and Jinja, Uganda. 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 8300 active clients. The Jinja site is located within the Jinja Regional Referral Hospital campus and provides HIV care to over 7600 clients. In addition to ART and counselling services, TASO has well established family planning and contraception services at its clinics, but has not integrated the routine delivery of safer conception services.

Participants

Clients were eligible for the study if they were (1) 18 years or older, (2) married or in a committed heterosexual relationship, and (3) reported an intention to conceive a child with their partner within the next 24 months. Only one member of a couple was allowed to participate to ensure the participants were independent of each other. The cohort was recruited between May and October of 2013. Recruitment took place primarily during the triage phase of clients registering their attendance at clinic visits. A brief screening was conducted with adult clients by the triage personnel. Those who were likely eligible were referred to the research coordinator for a more thorough screening. Consent procedures were implemented with confirmed eligible clients interested in participating. After providing written informed consent, participants were administered the baseline survey. Follow-up surveys were scheduled at 6-month intervals for 24 months; if the participant (or their partner) delivered a child, a survey was scheduled one month after the delivery. Surveys were not administered if the participant reported no longer seeking childbearing, but these participants continued to be tracked for the duration of their 24-month participation to monitor whether their fertility intentions changed, and if so survey administration was resumed. No intervention was conducted as part of this observational study. Participants received 15,000 Ush (\$6 USD) for completing each survey. The study protocol was reviewed and approved by Institutional Review Boards at [RAND Corporation and Makerere University], as well as the Uganda National Council for Science and Technology.

Measures

All measures were administered in Luganda, the most common native language in the study setting, at each assessment period using computer-assisted personal interview software.

SCM Utilization—Participants were asked whether they used any of the following methods while trying to conceive with their partner during the last 6 months: *Timed unprotected intercourse (TUI)*: Did you have unprotected or “live” sex only on the 2–3 specific days each month in which you (your partner) were (was) most fertile? *Sperm washing* (If male respondent and partner is HIV-negative): Did you pay for technology that cleanses your

sperm or semen of the HIV virus? *Manual self-insemination* (If female respondent and partner is HIV-negative): Did your partner ejaculate into a condom or container and then manually inject the semen into your vagina? Although not specific to the context of attempts to conceive, we also asked participants about the use of pre-exposure prophylaxis (*PrEP*) if the respondent's partner was HIV-negative: Did your partner take HIV medication every day during the months in which you were trying to conceive?

SCM Awareness—We developed a 15-item scale to measure awareness of SCM in general, and methods specific to conception (TUI, manual self-insemination, sperm washing), as well as methods not specific to conception (e.g., PrEP, treating any sexually transmitted infection [STI], waiting for higher CD4, starting ART early). Respondents were asked to indicate whether each statement was 'True' or 'False,' or whether they 'did not know.' The sum of correct responses was tabulated.

TUI Self-Efficacy—Respondents were asked to rate their confidence on a scale of 1 'Can't do at all' to 10 'Certain I can do' regarding their own ability to use TUI ("I can follow advice about limiting unprotected sex to only 2-3 specific days per month"), and their *partner's willingness to use TUI* ("Your partner would cooperate with advice to only have unprotected sex during 2-3 peak fertility days per month") on a scale of 1 'No confidence' to 5 'High confidence'.

SCM Motivation—We adapted items from the Brief Motivation Scale [25] to create 6 items to assess level of commitment and readiness to engage in safer conception counselling and use of SCM (e.g., "I am willing to go about conception in a non-traditional manner if it will reduce the risk of transmission to an uninfected partner"). Respondents rated their level of agreement with each statement on a scale of 1 'Strongly Agree' to 10 'Strongly Disagree'. Mean item score was computed and higher scores represented greater motivation.

Demographics—These included age, sex, and education level (whether or not any secondary education had been completed).

HIV Disease Management—Date of HIV diagnosis was self-reported, and CD4 count and ART status were abstracted from the participant's clinic chart.

Childbearing History and Current Fertility Intention—Participants reported their number of living children (including with current partner) and pregnancy history, as well as time frame of when they intended to conceive (0–6, 7–12, 13–24 months). Participants were also asked whether they had discussed their childbearing desires with their HIV care providers.

Relationship and Partner Characteristics—These included marital status, whether their partner had other spouses/partners (monogamous or polygamous relationship), HIV status of partner, and partner's knowledge of respondent's HIV status. In addition, we assessed *control over sexual decision making* in the relationship using the 15-item relationship control subscale of the Sexual Relationship Power Scale [26]. For each item statement respondents rate their level of agreement from 1 'Strongly Agree' to 4 'Strongly

Disagree’; mean item score was calculated and higher scores represent greater self agency in decision making.

Condom Use Measures—Safer conception requires that couples always use condoms outside the 2–3 days each month when the woman is fertile; therefore, we assessed condom use behaviour and attitudes. *Consistent condom use* was assessed by asking participants to indicate how often they used a condom during intercourse with their partner over the past 3 months, with ‘never’, ‘sometimes’ and ‘always’ being the possible responses. For analysis, a dichotomous composite variable was created to represent whether or not the participant reported always using condoms at each assessment they completed over the course of the study. Lastly, we assessed the *belief that desire for childbearing impedes consistent condom use* by asking participants to respond to the question, “Has the desire for wanting a child contributed to you and your partner not using condoms during intercourse over the past 3 months?” with a Yes/No response.

Stigma of Childbearing Among PLWHIV—We developed two items (“I feel ashamed for wanting to have a child”; “I feel selfish for wanting to have a child”) to assess respondent's *internalized childbearing stigma*. We developed a 3-item scale to measure the respondent's *perceived community childbearing stigma*; respondents were asked to indicate their level of agreement with statements reflecting their perceptions of how people in the community view HIV-infected individuals who want to have a child, HIV-positive women who get pregnant or an HIV-positive man who gets his partner pregnant. We developed a single item (“Most HIV providers think that HIV + clients should not have children”) to assess the respondent's *perceived provider childbearing stigma*. For all three of these constructs, response options for all items ranged from 1 ‘disagree strongly’ to 5 ‘agree strongly’; constructs with multiple items had item mean scores calculated and higher scores represented higher stigma.

Psychosocial Functioning—*Internalized HIV stigma* was assessed with an 8-item scale (e.g., “I am ashamed that I am HIV positive”) developed by Kalichman et al. [27]; response options range from 1 ‘disagree strongly’ to 5 ‘agree strongly’, a mean item score is calculated, and higher scores represent greater stigma. The 9-item Patient Health Questionnaire (PHQ-9) was used to measure *depression* over the past 2 weeks [28]; responses to each item range from 0 ‘not at all’ to 3 ‘nearly every day’ and item scores are summed. *Social support* was measured with a single item from the ACTG assessment battery [29]; respondents rated their agreement with the statement, “I can count on my family and friends to give me the support I need” using a scale of 1 ‘strongly disagree’ to 5 ‘strongly agree’.

Data Analysis

Descriptive statistics were used to describe sample characteristics. Bivariate statistics (Chi Square tests, 2-tailed independent t-tests) were used to examine baseline correlates of TUI use. Logistic regression analysis was used to further examine these correlates; independent variables included basic demographics (age, sex, any secondary education) as well as

baseline variables found to be correlated with TUI use in bivariate analysis at the $p < 0.10$ level.

Results

Sample Characteristics

A sample of 400 participants was enrolled (207 at Kampala, 193 at Jinja). With the exception of five who refused, those who were screened and were eligible decided to participate. The characteristics of the sample are listed in Table 1. Three-quarters of the sample was female; 30% reported that their relationship was polygamous, including 16 men and 3 women who had multiple partners/spouses, and 102 women who had only one partner but their male partner had multiple wives/partners. However, all participants except one reported that they were trying to conceive a child with only one person; 79% indicated that this partner was aware that the respondent was HIV-positive. Two-thirds (67%) reported that they intended to have a child within the next 6 months, 24% between 7–12 months from the time of the interview, and the remaining 9% within 13–24 months.

Awareness and Utilization of Safer Conception Methods

Just over one-third of the sample ($n = 139$; 34.8%) reported use of TUI at any time during the study, including 30.7% (75/244) of those whose partner's HIV status was negative or unknown, and 41.0% (64/156) of those with an HIV-positive partner. Of the 139 who reported any TUI use, first use of TUI was reported at baseline by 47 participants, 41 at month 6, 24 at month 12, 21 and month 18, and 6 at month 24; among those whose TUI use started prior to month 24 and who completed at least one assessment after they first used TUI, just 21.1% (24/144) sustained its use until pregnancy or completion of their study participation (for those who did not have a pregnancy). Among the 173 participants who reported a pregnancy during the course of the study, 36 (21.2%) reported using TUI prior to learning of their pregnancy.

Among the 244 participants whose partner's HIV status was negative or unknown, 24 (9%) reported use of PrEP at any time in the study, and 3 female participants reported that their male partner used manual self-insemination. No one reported use of sperm washing during the study.

At baseline, awareness of these methods was generally low, with just over half the participants knowing that manual self-insemination (53%) and TUI (51%) were methods to reduce transmission risk during conception, and only 15% knowing about the use of sperm washing or PrEP for this purpose. Similar to slightly higher levels of awareness of TUI (59%), manual self-insemination (64%), sperm washing (20%) and PrEP (22%) as safer conception methods were reported at the last follow-up assessment completed.

Correlates of Use of Timed Unprotected Intercourse

Given the low observed rate of use of other SCM, we restricted our examination of correlates to TUI. In bivariate analysis of baseline correlates, any report of TUI use during the study was significantly associated with older age, greater time since HIV diagnosis,

having an HIV-positive partner, having greater control over sexual decision making in the relationship, not always using condoms, greater belief that desire for children impedes condom use, greater SCM awareness, and greater perceived confidence in self and partner to use TUI (see Table 2); marginal correlates included lower internalized HIV stigma, having discussed fertility intentions with providers, and greater perceived provider stigma of childbearing among PLHA.

In the multiple regression analysis, which included bivariate correlates at the level of $p < 0.10$ [except for perceived confidence in partner being able to use TUI, which was not included due to concerns related to multi-collinearity as it was highly correlated with TUI self-efficacy ($r = 0.54$)], as well as gender, significant baseline predictors of any TUI use consisted of greater perceived provider stigma of childbearing, greater SCM awareness, greater TUI self-efficacy, greater belief that desire for children impedes condom use, greater control of sexual decision making, and not using condoms consistently (see Table 3). This regression analysis was repeated using data from the participants whose partner's HIV status was negative or unknown: significant predictors of any TUI use included greater SCM awareness, greater perceived provider stigma of childbearing, and greater belief that desire for having children impedes condom use (see Table 3).

Prevalence of Potential Horizontal HIV Transmission

At baseline, 244 (61%) participants reported that the HIV status of their partner was either negative ($n = 122$) or unknown ($n = 122$), of which 39 (16% of the 244) reported that the HIV status of this same partner had changed to HIV-positive from HIV-negative ($n = 15$) or unknown ($n = 24$) at one of the follow-up assessments, thereby indicating a potential seroconversion. However, the reported HIV status of this partner was not always consistent in interviews subsequent to the interview in which the partner was first reported as HIV-positive: 10 of these 39 were reported as being HIV-negative ($n = 3$) or of unknown HIV status ($n = 7$) at a subsequent interview; in all of these cases, the participant reported no change in partner.

Discussion

In this study of PLWHIV seeking to have children, SCM use was generally very low. TUI was the SCM most commonly used, though just by over one-third of the sample and not used consistently prior to conception, and other conception-specific methods were rarely or never used. Participants whose partner's HIV status was either negative or unknown at baseline reported a relatively high rate of potential partner seroconversion (15%) during the course of the 2-year follow-up, although the rate of true seroconversions may be much lower given the limitations of our assessment. These findings highlight the need for safer conception counselling to be integrated into sexual and reproductive health services for PLWHIV in order to promote use of SCM and limit horizontal transmission.

About one-third of the sample reported using TUI at any time during the study, which is more than the studies conducted in South Africa that found rates of 3% [30] and 17% [22], although our time frame was longer. The validity of self-reported data regarding TUI use is challenged by social desirability, but also the difficulty in assessing whether participants

who report using the method, used it correctly. Accurately determining the timing of the woman's ovulation period and knowing the duration of peak fertility is a challenge in and of itself for couples who want to use this method. A more comprehensive, detailed assessment is needed to better determine the correct use of the method.

Surprisingly, slightly higher rates of TUI use were reported by participants whose partners were also HIV-infected, much like the findings of Steiner et al. [22]. This may reflect the strong encouragement that HIV clients in Uganda receive regarding the importance of preventing HIV superinfection and transmission of drug resistant virus; alternatively, concordant couples who know each others status may be better able to communicate about and negotiate use of risk reduction methods. Also, once TUI use was initiated it was typically not sustained until pregnancy was achieved, highlighting the need for counselling to encourage and reinforce its continued use to conception.

Poor awareness of SCM was a key barrier to use of TUI, and undoubtedly the other SCM as well. At baseline, only half were aware of TUI and manual self-insemination as methods to reduce transmission during conception; awareness of sperm washing and PrEP was much lower. In the absence of any intervention, awareness of these specific SCM remained relatively unchanged over the course of the study, despite these methods being asked about and described to participants at each assessment. Knowing about the availability of SCM is an essential first step in the process of using these risk reduction methods. Receipt of safer conception counselling is instrumental to a client gaining knowledge of SCM, as well as garnering partner support if the partner is included in the counselling. Providers need to initiate discussions with their clients about childbearing and SCM options, but clients also need to inform their providers of their childbearing desires and need for safer conception counselling. Unfortunately, counselling to address barriers to the use of SCM and instruct clients and couples 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; in fact, providers and HIV clients do not typically discuss the childbearing desires of clients [8, 31–33]. Even when a client does discuss fertility intentions with a provider, our qualitative research suggests that such discussions rarely include available options for safer conception methods [23].

TUI use was also associated with several measures related to condom use, including inconsistent condom use, belief that fertility desires impede consistent condom use, greater control over sexual decision making (including condom use), and greater TUI self-efficacy. TUI requires consistent condom use outside the 2–3 days of fertility that the woman experiences each month, nonetheless, clients who find it difficult to always use condoms, and who see their childbearing desires as creating a further challenge to condom use, may have greater appreciation for TUI as a method that allows for condomless sex, even if only for 2–3 days a month while trying to conceive. The associations with self-efficacy and control over sexual decision making within the relationship highlight the importance of internal locus of control around condom use with one's partner, and being able to use condoms outside of the 2–3 day fertile period, to being able to use TUI.

Greater perceived provider stigma of childbearing in PLWHIV was a significant predictor of TUI use among participants whose partner's HIV status was negative or unknown. Provider stigma of childbearing is partly attributed to concerns about the risks of HIV transmission to uninfected partners and future infants [34, 35]. Therefore, clients who perceive their providers to be unsupportive of childbearing may attribute this lack of support to provider fears about the risk of HIV transmission, which may sensitize the client to the importance of using SCM such as TUI. Furthermore, lack of support or counselling from providers may render clients with few options beyond methods that they are more familiar with and have greater access to; hence, the greater use of TUI (which is a common method of family planning) relative to use of manual self-insemination or PrEP. Training to reduce provider stigma and foster a more supportive, informative environment within routine HIV care is needed to promote greater exchange of information about childbearing needs between clients and providers, and encourage greater and more varied use of SCM.

Manual self-insemination was used by only three participants despite it being a low cost method, while the absence of any use of sperm washing was less surprising given its relatively high cost and low access (to our knowledge, there are only four clinics in Uganda, three of these located in Kampala, that offer this service). Yet it is noteworthy that nearly 10% of participants whose partner was negative or unknown reported their partner used PrEP during the course of the study. This highlights how PrEP is becoming increasingly accessible in Uganda and a viable safer conception strategy, despite it not being currently part of Ministry of Health policy in Uganda. Although it is possible that respondents could have been considering partner use of antiretroviral medications other than Truvada when responding to the PrEP question, we believe that it is feasible for our finding to represent actual PrEP access. Major PrEP research was conducted in Uganda [36] and findings were well publicized, so HIV clients often know about PrEP and it is not uncommon for clients in serodiscordant relationships to demand PrEP for their partners. In response, individual providers have told us anecdotally that they sometimes prescribe PrEP when circumstances warrant doing so.

The relatively high rate of potential partner seroconversion observed in the study reveals the risks of HIV transmission associated with attempts to conceive in serodiscordant couples, although seroconversion was not associated with pregnancy, use of TUI, or even ART use by the index participant. Partner seroconversion may result from the partner not knowing the index participant's HIV status and thus not using protection, or it could also be that partners are just now testing during the course of the study (and finding out they are HIV-positive) when they are trying to conceive and have an incentive to learn their status. It is also important to note that our data relied solely on participant self-report of their partner's HIV status, not actual HIV antibody tests of the partner. We qualify these seroconversions as “potential” because it is impossible for us to confirm that actual seroconversion took place during the study (and attempts at conception). In the absence of performed partner HIV tests at study baseline, nor confirmed dates of when the partner was last tested, these partners may have already been HIV-infected at study baseline and this was simply not known to the partner and/or the index participant. The vulnerability of self-report data to various biases is further highlighted by the fact that a quarter of the cases with potential seroconversion had discrepant HIV status reports during assessments subsequent to the assessment in which

seroconversion was first reported. Future research must confirm partner HIV status with antibody tests at baseline and study endpoint in order to more definitively assess partner seroconversion in the context of serodiscordant couples trying to conceive.

Aside from the issues described above with regard to the self-report measures of SCM and partner HIV status, another limitation to the study is the sample being comprised solely of PLWHIV who are receiving HIV care, which limits the generalizability of our findings. The study results are only applicable to PLWHIV who are in HIV care and have intentions to conceive with their partner. Those who are not in HIV care may be less likely to be familiar with safer conception methods and how to use them.

The need for safer conception counselling to be integrated into routine HIV care services is a key policy implication of our study findings. The Uganda National Strategic Plan and National Priority Action Plan for HIV/AIDS emphasize the integration of sexual and reproductive health into HIV care programs as a key intervention to reduce HIV transmission [37]. However, these policies and guidelines focus on prevention of maternal to child transmission and unplanned pregnancies, with minimal guidance on how to support HIV-affected couples who desire to have children. Our prior qualitative research suggests that HIV providers want the training needed to provide quality safer conception counselling [23]. With both clients and providers having a desire for the provision of safer conception counselling, the field is primed for the integration of this important service into routine HIV reproductive health services, which is key to making further inroads to improving the health and safety of pregnancies in PLWHIV.

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Table 1
Characteristics of the sample (N = 400)

Variable	Mean/frequency (SD or %)
Demographics	
Female	299 (74.8%)
Mean age (years)	33.8 (7.5)
At least some secondary education	179 (47.2%)
Health characteristics	
Mean years since HIV diagnosis	5.5 (4.7)
Mean CD4 count	435 (277)
On HIV antiretroviral therapy	242 (60.7%)
Reproductive health history	
Have had children	354 (88.5%)
Mean number of children (among parents)	3.2 (2.3)
Have had a child with current partner	195 (48.8%)
Had pregnancy since knowing HIV status	110 (38.7%)
Relationship/partner characteristics	
Married	175 (43.8%)
In a polygamous relationship	121 (30.3%)
HIV status of partner	
HIV positive	156 (39.0%)
HIV negative	122 (30.5%)
Unknown HIV status	122 (30.5%)
Partner knows respondent's HIV status	317 (79.3%)

Table 2
Bivariate correlates of potential HIV seroconversion (SC) and any use of timed unprotected intercourse (TUI)

	Any TUI use	No TUI use	p
Demographics			
Mean age	34.8	33.2	0.045
Female	69.8%	77.4%	0.096
Any secondary education	52.2%	44.5%	0.149
Health management			
CD4 cell count	464	420	0.132
On ART	57.6%	61.9%	0.396
Time since HIV diagnosis (years)	6.1	5.1	0.045
Has talked with provider about childbearing desires	49.6%	41.0%	0.098
Relationship/partner			
Control in sexual decision making	2.68	2.54	0.008
Married	45.3%	50.0%	0.644
In polygamous relationship	25.9%	32.6%	0.168
Number of children	3.4	3.1	0.314
Partner's HIV status is negative/unknown	54.0%	64.8%	0.035
Partner knows respondent is HIV+	83.5%	77.0%	0.131
Condom use			
Consistent condom use	20.1%	33.3%	0.005
Believes that fertility desires impede condom use	56.1%	39.1%	0.001
Psychosocial functioning			
Depression	3.34	3.32	0.942
Internalized HIV stigma	2.17	2.32	0.072
Social support	3.58	3.59	0.965
Childbearing stigma			
Internalized childbearing stigma	1.31	1.24	0.351
Community stigma of childbearing	4.04	3.98	0.624
Provider stigma of childbearing	2.28	2.04	0.094
SCM measures			
Partner willingness to use TUI	4.27	3.66	0.000
TUI self-efficacy	8.80	8.47	0.041
SCM awareness	10.1	9.0	0.000
SCM motivation	8.99	9.02	0.845

Table 3
Logistic regression analysis of baseline predictors of any use of timed unprotected intercourse (TUI) in whole sample, and those with HIV-negative or unknown status partner

Independent variable	Any TUI use OR (95% CI)	Any TUI use (partner's HIV status is negative/unknown) OR (95% CI)
Female	0.93 (0.48, 1.82)	0.40 (0.15, 1.05)
Age	1.03 (1.00, 1.07) *	1.04 (0.99, 1.10)
Time since HIV diagnosis	1.01 (0.96, 1.07)	1.04 (0.95, 1.13)
Discussed childbearing intentions with provider	1.20 (0.74, 1.93)	1.31 (0.68, 2.50)
Perceived provider stigma of childbearing	1.20 (1.00, 1.43) **	1.30 (1.02, 1.66) **
Partner is HIV+	1.13 (0.69, 1.85)	–
Control of sexual decision making in relationship	2.12 (1.08, 4.18) **	1.73 (0.68, 4.39)
Consistent condom use	0.45 (0.25, 0.81) ***	0.60 (0.27, 1.32)
Believe that desire to have child impedes condom use	2.14 (1.31, 3.52) ***	2.14 (1.10, 4.16) **
Social support	1.15 (1.02, 1.30) **	1.10 (0.96, 1.26)
Internalized HIV stigma	1.13 (0.82, 1.54)	1.17 (0.78, 1.75)
Awareness of SCM	1.26 (1.13, 1.39) ***	1.20 (1.04, 1.38) **

OR odds ratio; CI confidence interval

 p < 0.01,

**
 p < 0.05,

*
 p < 0.1