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Does Integrating Family Planning into HIV Services Improve Gender Equitable Attitudes? Results from a Cluster Randomized Trial in Nyanza, Kenya

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Abstract

This study investigated whether integrating family planning (FP) services into HIV care was associated with gender equitable attitudes among HIV-positive adults in western Kenya. Surveys were conducted with 480 women and 480 men obtaining HIV services from 18 clinics 1 year after the sites were randomized to integrated FP/HIV services (N = 12) or standard referral for FP (N = 6). We used multivariable regression, with generalized estimating equations to account for clustering, to assess whether gender attitudes (range 0–12) were associated with integrated care and with contraceptive use. Men at intervention sites had stronger gender equitable attitudes than those at control sites (adjusted mean difference in scores = 0.89, 95 % CI 0.03–1.74). Among women, attitudes did not differ by study arm. Gender equitable attitudes were not associated with contraceptive use among men (AOR = 1.06, 95 % CI 0.93–1.21) or women (AOR = 1.03, 95 % CI 0.94–1.13). Further work is needed to understand how integrating FP into HIV care affects gender relations, and how improved gender equity among men might be leveraged to improve contraceptive use and other reproductive health outcomes.

Keywords

Gender equity; Family planning; HIV; Integrated services; Sub-Saharan Africa

Introduction

While the unmet need for family planning (FP) in developing countries has declined, it remains high in sub-Saharan Africa (SSA) [1]. In 2012, an estimated 60 % of reproductive-

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aged women in SSA who wished to avoid pregnancy were not using modern contraception [2], and 35 % of pregnancies in the region were mistimed or unwanted [3]. Studies have suggested that HIV-positive women are at particularly high risk of unintended pregnancy [4-6], highlighting the need for effective FP interventions to meet their reproductive needs. The integration of FP services into HIV care has emerged as a promising strategy to increase contraception use among women and couples affected by HIV [7].

It is hypothesized that integrating FP into HIV services could increase contraceptive use by improving access to services and streamlining care for patients [8, 9]. Findings from recent studies suggest that FP and HIV service integration may also facilitate male partner involvement in FP by increasing men's education about FP and fostering male inclusion in FP decision-making [10, 11]. Many have called for positively engaging men in FP to address the resistance of male partners to contraception, which has been extensively documented as a barrier to FP uptake by women in SSA [12-16]. While relatively few male-targeted FP interventions have been rigorously evaluated [17], increasing positive male partner involvement may improve communication about FP between couples [18] and strengthen support for partner use of contraceptives [19]. Despite the potential for FP and HIV integration to influence gender relations, the impact of integrated services on gender equity (GE) and women's empowerment has not been evaluated [20].

In this study we evaluated whether integrating FP into HIV services improves contraceptive use by influencing gender-related attitudes in men and women. Gender attitudes have been found to play an important role in shaping men's responses to FP [21-23]. Furthermore, studies have shown that among men, gender equitable attitudes have been associated with reporting modern contraceptive use [24] and communication with partners about condom use [25], while support for inequitable gender norms has been associated with decreased condom use [26]. Our primary research question was whether integrated FP and HIV services were associated with stronger gender equitable attitudes among HIV-positive patients. Secondly, we assessed whether gender equitable attitudes were associated with use of more effective contraceptive methods, i.e., hormonal contraceptives, intrauterine devices (IUDs), and permanent methods.

Methods

Study Setting

This cross-sectional study was conducted between July and September 2011 in Nyanza Province in rural, western Kenya as part of the endline data collection for a cluster randomized controlled trial (RCT) evaluating whether integrating FP services into HIV care and treatment was associated with contraceptive prevalence (http://clinicaltrials.gov/,). Nyanza has the largest percentage of married women with an unmet need for FP in the country (32 %) and one of the highest fertility rates (5.4) [27]. The adult HIV prevalence in Nyanza is 15.1 % compared to 5.6 % nationally [28]. Previous studies in this area have also identified male partner resistance to FP as a reason for women's covert or non-use of contraception [29-31].

Study Procedures

Eighteen public sector HIV clinics in the Kisumu, Migori, Nyatike, Rongo, and Suba Districts of Nyanza Province, Kenya participated in the RCT. All sites provided comprehensive HIV care and treatment, including antiretroviral therapy (ART) and condoms for HIV prevention, and were supported by Family AIDS Care & Education Services (FACES), a collaboration between the University of California, San Francisco (UCSF) and the Kenya Medical Research Institute (KEMRI) [32]. Twelve HIV clinic sites were randomized to the integration intervention as part of the RCT and provided FP counseling, condoms and more effective contraceptives (IUDs, implants, injections, and pills) in addition to HIV services. Six control sites provided the standard of care: provision of condoms and referral to FP clinics for more effective contraceptives. Healthcare providers at all sites, regardless of intervention status, were trained in FP education and counseling and trained to ask patients about their current contraceptive use and interest in starting a method. FP-related health talks were also conducted in the waiting areas at all sites [33]. Notably, the intervention did not have an explicit focus on GE topics. More information about the clinical sites, the intervention and study procedures can be found in the trial's primary outcome publication [8]. Ethical approval was received from the UCSF Committee on Human Research and the KEMRI Ethical Review Committee.

Participant Eligibility and Sampling

Female and male patients were approached by trained interviewers in the clinic waiting bays and informed about the opportunity to participate in the survey. Eligibility criteria included: (1) HIV-positive woman or man obtaining HIV care at the clinic, (2) not currently pregnant (if female), (3) age 18–45 years old, and (4) willing and able to give informed consent. If patients were interested in participating and met the above eligibility criteria, informed consent was obtained and the survey was conducted after their clinic visit. A total of 480 women and 480 men were surveyed.

Surveys

As part of the RCT, we conducted endline surveys among individual clinic patients from both intervention (N = 12) and control (N = 6) sites in order to assess differences in FP knowledge, attitudes and practice and gender equitable attitudes between patients seen at intervention and control clinics. The surveys were administered face-to-face by an interviewer in the respondent's preferred language (Dholuo, Kiswahili, or English) in a private area of the health facility. The survey included questions assessing FP knowledge, attitudes, and practice adapted from the Kenyan Demographic and Health Survey modules on contraception, marriage and sexuality, and fertility preferences [34] and questions evaluating gender equitable attitudes. Study participants received approximately four US dollars as reimbursement for travel expenses.

Measures

Gender Equitable Attitudes—We defined a gender equitable man or woman to be someone who seeks relationships based on equality, respect, and intimacy; believes women and men have equal rights, including right to sexual agency; considers both women and men

to be responsible for sexual and reproductive health in a relationship; regards both women and men to have responsibility for household chores and childcare; and is opposed to violence against women [35]. To assess gender equitable attitudes, we used a modified version of the Gender Equitable Men (GEM) scale. The GEM scale is a 24-item scale developed to examine male perceptions of gender norms regarding sexual and reproductive health, intimate relationships, and violence [35]. It was originally developed in Brazil (internal consistency $\alpha = 0.81$) and has subsequently been adapted for use in a variety of developing countries with consistently high reliability [36, 37]. The scale was found to be associated with reported contraceptive use by young men in Brazil [35] and with reported use of a modern contraceptive method among reproductive-aged Kenyan and Ethiopian men and women [24].

For this study, we adapted a version of the scale modified for use in Kenya and Ethiopia [24], which included 16 items to emphasize attitudes about sexual behavior, violence, and domestic decision-making and work. In the modified scale, the items' original Likert scale responses (1–5 for strongly agree to strongly disagree) had been changed to agree or disagree responses based on field testing conducted in Kenya indicating that respondents were unable to distinguish between the original response categories [24]. Prior to use in this study, we examined the psychometric properties of the scale in our study population. We removed four of the 16 dichotomous items for both sexes because over 95 % of participants of each sex fell into one response category; thus the items exhibited low correlation with others and did not differentiate participants by GE level. The 12 remaining items were fit to rating scale item response models to assess psychometric performance, separately by sex [38] (Table 1). All items fit the model, and participants scoring higher on each item scored higher on the scale overall. The separation reliability (similar to Cronbach's alpha) was 0.61 among women and 0.71 among men.

For analyses, GE scores were treated as a 0–12 raw score scale to facilitate interpretability of scores. Because prior research indicated that gender equitable attitudes were associated with contraceptive use only at the highest levels [24], we also used a dichotomous GE variable of the top quartile of GE scores. In cognitive interviews with men and women in Kenya, scale items were understood as intended by participants, although interpretations differed between men and women [39]. Thus, in this study, we assessed the scale separately by sex.

Contraceptive Use—We assessed contraceptive use with a dichotomous measure of current use of a more effective method of contraception, including female or male sterilization, implant, IUD, injectable, or pills. We also included a measure of current use of a modern method of contraception that included male and female condoms. For men, we asked specifically about the methods used by their main wives or sexual partners.

Covariables—We included a continuous variable for age (years) and a categorical variable for number of living children (0—1, 2–3, 4 or more). We assessed education as whether the participant had more than a primary school education. Desired fertility timing was assessed with an item asking when the participant (next) wanted pregnancy (wants no more children, wants a child in >2 years, wants a child within 2 years). To assess partner status, we asked participants if they were currently married or living with a partner as if married. If they

were, we asked whether the relationship was monogamous or polygynous. We created a categorical variable of marital/partner status (married/lives with partner, monogamous; married/lives with partner, polygynous; not married/living with partner). Participants with a main partner reported the HIV status of the main partner (don't know, negative, positive). We included a variable for whether the participant was on or starting ART.

Data Analysis

All analyses were conducted using Stata 12 (StataCorp LP, College Station, TX) and included 479 women and 479 men—all participants in the sample excluding two participants who did not provide responses to the gender equitability items. We described participant characteristics and assessed differences in characteristics between participants at intervention and control facilities, separately by sex, with a series of regression models, using a generalized estimating equation (GEE) approach with robust standard errors to account for the study design which clustered individuals within recruitment facilities.

To examine whether patients at intervention sites had stronger gender equitable attitudes, we first used bivariable regression with GEE, and then a multivariable model including variables that we hypothesized a priori might confound the relationship between intervention status and GE. Models were fit separately by sex. To assess whether GE was associated with use of a more effective contraceptive method, we used bivariable and multivariable logistic regression with GEE. We repeated analyses with the modern contraceptive method outcome variable and, again, with the dichotomous GE variable. Contraceptive use models excluded the participants who were infertile or desired pregnancy in the next 6 months.

Results

Demographic Characteristics

Comparing characteristics of female participants at intervention and control sites, women at intervention sites had more children and were less likely to have an HIV-positive main partner than those at control sites. Women at intervention sites were significantly more likely to report use of modern and more effective contraceptives, which is consistent with the outcome of the integration RCT [8]. Among men, those at intervention sites were more likely to desire additional children than those at control sites (Table 2).

Gender Equitable Attitudes

On average, women scored 5.0 on the 0–12 gender equitable attitudes scale, with a standard deviation (SD) of 2.1. Men's scores were on average 6.6 (SD = 2.5). Of the 12 scale items, men and women both expressed the highest level of GE in response to the item that "men and women should share household chores," with 88 % of women and 90 % of men agreeing to this item. Both men and women showed the lowest GE level in response to the item that "men need sex more than women do," with only 2 % of women and 15 % of men disagreeing (Table 1).

In bivariable analyses, GE scores did not differ between women at intervention and control sites (means, SD = 4.9, 2.1 vs. 5.0, 2.1, respectively; mean difference = −0.11, 95 %

confidence interval (CI) −1.04 to 0.81). In contrast, men at intervention sites had more gender equitable attitudes compared to those at control sites (means, SD = 6.9, 2.5 vs. 5.9, 2.4, respectively; mean difference = 1.04, 95 % CI 0–2.08) (Fig. 1).

In multivariable analyses, we again found no significant difference in GE scores between women at intervention and control sites (Table 3). Older women had lower GE scores (adjusted mean decrease per year = −0.04, 95 % CI −0.07 to −0.01), and women with more than a primary education had higher scores (adjusted mean difference = 1.55, 95 % CI 0.91–2.20), compared to women with less than a primary education. However, among men, intervention site (adjusted mean difference = 0.89, 95 % CI 0.03–1.74) and higher education (adjusted mean difference = 1.92, 95 % CI 1.37-2.47) were significantly associated with stronger gender equitable attitudes.

Contraceptive Use

GE scores were not associated with use of a more effective contraceptive method among women (adjusted odds ratio (AOR) = 1.03, 95 % CI 0.94–1.13) (Table 4). Receiving HIV care at intervention sites was associated with reporting more effective contraceptive use among women (AOR = 1.94, 95 % CI 1.00–3.79). Those living together in polygynous relationships were less likely to be using more effective methods than those living together in monogamous relationships (AOR = 0.54, 95 % CI 0.36–0.82). Those who desired a child within 2 years were less likely to be using a more effective method than those who wanted no more children (AOR = 0.46, 95 % CI 0.25–0.85). Similarly, women who had 2–3 children or four or more children were more likely to be using a more effective method of contraception than those without children or with a single child (AORs = 2.84, 95 % CI 1.69–4.78 and 3.88, 95 % CI 2.34–6.42, respectively).

Among men, GE scores were also not associated with whether they reported more effective contraceptive use by their female partners (AOR = 1.06, 95 % CI 0.93–1.21). Receiving HIV care at intervention sites was not associated with whether men reported more effective contraceptive use by their female partners (AOR = 1.16, 95 % CI 0.65–2.08). Male older age was negatively associated with reporting more effective contraceptive use by female partners (AOR = 0.97, 95 % CI 0.93–1.00). Compared to men in monogamous relationships, unmarried men and men not living with partners were far less likely to report their partners using more effective methods (AOR = 0.17, 95 % CI 0.04–0.71).

Results were unchanged when we repeated analyses with modern contraceptive method use (including condoms) as the outcome and using the dichotomous GE variable (data not shown).

Discussion

The integration of FP services into HIV care is a promising strategy to address the unmet need for contraception in SSA. Our study is the first to explore whether FP/HIV integration influences the gender equitable attitudes of patients receiving integrated services. Our study also adds to the literature on measuring perceptions of gender norms and how this relates to contraceptive use, an area where the perspectives of men have been underrepresented [24].

We found that receiving integrated services was associated with stronger gender equitable attitudes for men, but not for women, and that GE was not among the factors associated with contraceptive use for either gender.

Men receiving HIV care at clinics with integrated FP services had higher GE scores than men who received care from control clinics, while there was not a difference in GE scores among women. In light of recent studies suggesting that FP/HIV integration facilitates male partner involvement in FP [10, 11], we posit that offering FP services in HIV clinics may have created environments where men could learn about FP, accompany their partners to clinic visits, and participate in couple's FP counseling, thereby emphasizing a more proactive, supportive role for male participants in reproductive health [37]. A recent analysis of the endline survey of the FP/HIV integration RCT found that fewer men seeking care at integrated FP/HIV clinics agreed with the statement that FP was "women's business" compared to men at control clinics [34]. An environment that integrates FP into HIV services thus might challenge the idea that FP is a "woman's domain", which has been shown to be a factor in male partner resistance to contraception in western Kenya [22, 40-42]. In addition to integration status, other significant associations included older age and lower GE scores for women, and higher education and higher GE scores for both women and men, similar to findings from a study in Sudan demonstrating associations between older age and lack of education with inequitable gender attitudes [43].

Contrary to our expectations, GE scores were not associated with contraceptive use for either female participants or the female partners of male participants. This differs from findings of a study in Kenya and Ethiopia showing that a higher GE score on the GEM scale, particularly the highest category of GE scores, was associated with significantly higher odds of reporting modern contraceptive use by both women and men [24]. A study in Tanzania found an association between modern contraceptive use and gender equitable attitudes among women but not among men [44]. Studies in other countries utilizing the GEM scale have also found an association between GE scores and modern contraceptive use [35, 37]; however, few of these studies have evaluated the relationship between GE and more effective contraceptive use, focusing instead on HIV and STI risk and condom use. Furthermore, the GEM scale measures dimensions of equity and there may be other domains, such as power and control in relationships, that are more closely tied to contraceptive use for women and men in our study population [24]. Notably, men were asked to report the contraceptive use of their female partners, so we may not have captured autonomous contraceptive use by their female partners. Studies evaluating spousal reports of contraceptive use have noted discrepancies [45], and recent analyses in Liberia, Madagascar, and Namibia found that husbands reported higher rates of condom use at last coitus than wives but reported lower rates of contraceptive use [46]. Further studies are needed to better understand the relationship between gender attitudes and contraceptive behavior, including long-term and hormonal contraceptive use, in different sociocultural settings in SSA.

We found several factors to be associated with contraceptive use. Women receiving integrated FP/HIV services were more likely to report using more effective contraceptives, which is consistent with the findings of the main integration RCT [8], though we did not find this association among men. Since women were patients at the HIV clinic, the provision of

integrated FP services may have had a more direct impact on their contraceptive use, while the benefits of such integrated services may not have extended to men's female partners. Furthermore, men's reporting of their female partners' FP use may have been insufficient to capture actual contraceptive use, as noted previously. Among other significant FP findings, women in polygynous relationships were less likely to report using more effective contraception than those in monogamous marriages, which aligns with literature in SSA evaluating marriage type and contraception [47-49]. In Kenya, lower contraceptive use in polygynous marriages has been linked to higher fertility desires and earlier initiation into sexual and reproductive activity [50]. More effective contraceptive use was lower among women who wanted a child within 2 years and higher among those with 2–3 or 4 + children, which corresponds to Kenyan data showing a strong association between parity and contraceptive use [27, 51, 52]. For men, being younger was associated with reporting a female partner's contraceptive use, perhaps reflecting exposure to changing social and cultural norms about FP. Being unmarried/non-cohabiting was negatively associated with men reporting contraceptive use among their female partners, possibly because these men were not having sex with a regular partner and were less aware of their partners' contraceptive practices.

Understanding whether and how integrating FP into HIV services influences gender relations can help shape ongoing efforts to bolster contraceptive use. Our findings indicate that the relationship between integration, GE, and contraception use may differ for women and men and warrants further research. FP/HIV integration was not associated with more gender equitable attitudes for women, yet those at integrated clinics reported more contraceptive use compared to controls. For men, on the other hand, FP/HIV integration was associated with GE but not with contraceptive use. It is possible that increased access to and availability of FP services at the HIV clinic may have been sufficient to facilitate women's contraceptive use, while for men increased exposure to FP may have done more to influence their gender-related attitudes—a process that could take longer to translate into contraceptive behavior change for them and their female partners. Our findings may also indicate that contraceptive use could be influenced by different aspects of relationship dynamics for women and for men; for example, relationship power may play a larger role for women, which we did not evaluate in our study. Future researchers could consider incorporating measures like the sexual relationship power scale (SRPS) [53] alongside the GEM scale to evaluate the impact of FP/HIV integration on gender relations.

Our study had a number of limitations. GE attitudes were only measured post-integration, compromising our ability to find a causal association between a change in GE attitudes as a result of FP/HIV integration and contraceptive use. Our measurement of contraceptive use was restricted to self-reported data that may reflect bias from under- or over-reporting; furthermore, using men's responses as a proxy for their female partner's FP use may not have captured autonomous contraceptive use, which has been documented among women in Kenya [45]. While our GEM scale was validated and psychometrically tested in our study population prior to use, the scale items may not have represented the GE domains most associated with contraceptive use for men and women in this particular region. Studies have also shown that men can hold inequitable and equitable gender attitudes simultaneously, further illustrating the inherent complexity of measuring gender attitudes and their

influences on behaviors [37, 54, 55]. The fact that we found higher GE scores among men compared to women overall could be due to differences in ways of conceptualizing GE among men and women or it could also be an indication of social desirability bias. Researchers have suspected that differential perceptions of GE and female autonomy between men and women may be due to men providing more “acceptable” responses rather than a difference in attitudes [44, 56], and that responses could be influenced by gender stereotyping [24]. Finally, our results may not be generalizable to HIV clinics in other locations, to clinics providing services other than HIV care, or to those providing care to HIV-negative clients.

Conclusion

Integrating FP services into HIV care may not only address service-related barriers to contraception for HIV-positive women but may also affect gender relations. Longitudinal, couples-level research is needed to further explore whether FP and HIV service integration improves GE and positive male partner involvement, and how these affect female contraceptive use and ultimately the incidence of unintended pregnancy. Studies should also continue to evaluate gender norms and attitudes among women and men in diverse settings, particularly the domains that might have the largest impact on contraceptive behaviors. From a programmatic perspective, clinics offering integrated FP/HIV services may be potential sites for GE interventions that seek to positively engage men in FP. Because men feel a sense of belonging in the HIV clinic setting, integrated FP and HIV services that involve men in FP education and counseling may also create pathways for promoting GE by creating opportunities to challenge and change inequitable attitudes and beliefs concerning reproductive health and sexual relationships.

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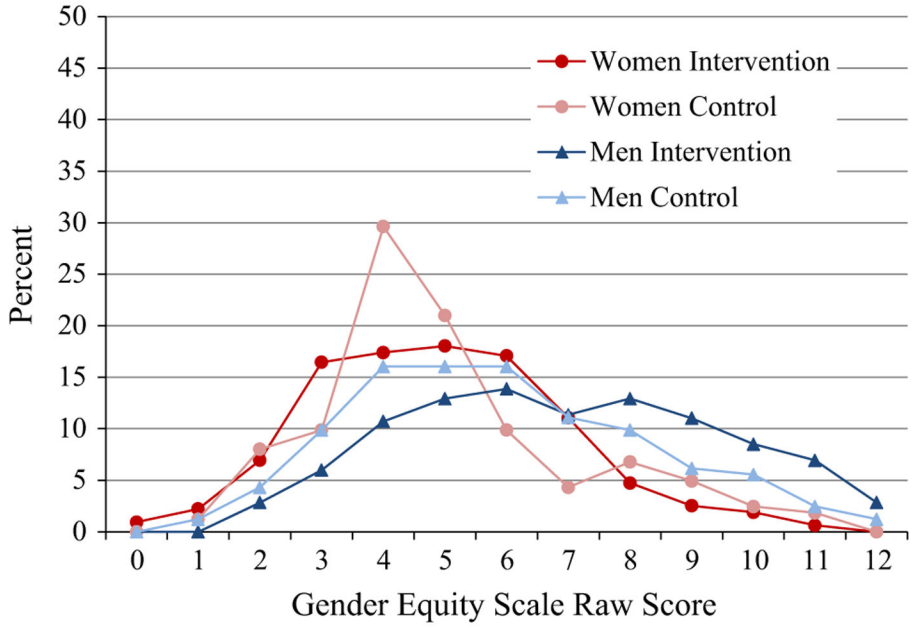

Fig. 1.
Distribution of gender equity scores among women and men

AIDS Behav. Author manuscript; available in PMC 2019 July 25.

Table 1

Gender equitable attitudes scale items and percent with a response indicating “high” equity, by gender

Scale Items	Women (N = 479)	Men (N = 479)
	%	%
Men and women should share household chores (agree)	88	90
You don’t talk about sex, you just do it (disagree)	84	90
A man needs other women even if things with his wife are fine (disagree)	77	85
A woman should not initiate sex with her partner (husband or boyfriend). (disagree)	60	70
A man can hit his wife if she will not have sex with him (disagree)	36	62
A real man produces a male child (disagree)	54	59
Men are always ready to have sex (disagree)	25	52
It is a woman’s responsibility to avoid getting pregnant (disagree)	17	44
A woman should tolerate physical violence to keep the family together. (disagree)	28	42
Changing diapers, giving the kids a bath, and feeding the kids are the mothers’ responsibility (disagree)	13	27
A man should have the final word about decisions in his home (disagree)	14	22
Men need sex more than women do (disagree)	2	15

Table 2

Characteristics of female and male clients, by intervention or control site, and p values from regression models (GEE), Nyanza, Kenya (N = 958)

Characteristics	Total (N = 958)	Women (N = 479)			Men (N = 479)		
		Intervention (N = 316)	Control (N = 163)	*p*	Intervention (N = 317)	Control (N = 162)	*p*
Age, years (mean)	33.3	30.3	29.6	0.37	37.1	35.2	0.11
Has a current partner (%)	86.9	81.9	82.2	0.95	92.4	90.7	0.44
Marital/partner status (%)							
Married/lives with partner, monogamous	58.4	44.7	47.2	0.86	72.9	67.7	0.45
Married/lives with partner, polygynous	20.9	25.9	23.9		15.5	18.6	
Not married or living with partner	20.8	29.4	28.8		11.7	13.7	
Has > primary education (%)	23.4	21.8	13.5		21.8	13.0	
Living children (%)							
0–1	20.0	15.5	26.4	0.02	19.6	23.0	0.43
2–3	39.5	48.4	41.7		32.2	34.2	
4 or more	40.5	36.1	31.9		48.3	42.9	
Desired fertility timing (%)							
Wants no more children	51.2	57.6	54.0	0.70	42.6	52.5	0.05
Wants a child in > 2 years	20.3	20.6	19.6		23.0	14.8	
Wants a child within 2 years	28.6	21.8	26.4		34.4	32.7	
HIV status of main partner[a] (%)							
Don't know	11.6	14.8	12.1	<0.01	8.0	12.4	0.24
Negative	17.4	15.2	6.8		22.3	21.4	
Positive	71.0	70.0	81.1		69.7	66.2	
On or starting ARVs (%)	75.5	73.6	71.8	0.80	77.9	78.1	0.99
Using a more effective contraceptive[b] (%)	37.7	59.9	42.3	0.01	23.3	17.9	0.26
Using a modern contraceptive[c] (%)	82.6	83.1	72.4	0.02	87.1	83.3	0.50

[a] Among those with a current partner only

[b] More effective methods include female and male sterilization, IUD, implant, injectable, and pills

[c] Modern methods include female and male sterilization, IUD, implant, injectable, pills, and condoms

AIDS Behav. Author manuscript; available in PMC 2019 July 25.

Table 3

Factors associated with gender equity scores, coefficients and 95 % confidence intervals from multivariable GEE linear regression models

Factors	Gender equity scores			
	Women (N = 476)[a]		Men (N = 477)[a]	
	Adjusted Beta	95 % CI	Adjusted Beta	95 % CI
Intervention site	−0.23	−1.06, 0.60	0.89 *	0.03, 1.74
Age (years)	−0.04 *	−0.07, −0.01	0	−0.03, 0.03
Marital/partner status				
Married/lives with partner, monogomous	ref		ref	
Married/lives with partner, polygynous	−0.16	−0.46, 0.14	−0.35	−0.98, 0.28
Not married or living with partner	−0.05	−0.87, 0.77	−0.15	−0.96, 0.66
Has > primary education	1.55 ***	0.91, 2.20	1.92 ***	1.37, 2.47
Living children				
0–1	ref		ref	
2–3	0.30	−0.13, 0.73	0.20	−0.22, 0.62
4 or more	0.06	−0.57, 0.68	−0.15	−0.91, 0.60
Desired fertility timing				
Wants no more children	ref		ref	
Wants a child in > 2 years	−0.06	−0.43, 0.31	0.50	−0.07, 1.07
Wants a child within 2 years	0.31	−0.19, 0.82	0.10	−0.54, 0.74
HIV status of main partner				
Don’t know	ref		ref	
Negative	0.52	−0.10, 1.15	0.25	−0.75, 1.25
Positive	0.42	−0.01, 0.86	0.30	−0.55, 1.15

* $p < 0.05$;

** $p \leq 0.01$;

*** $p \leq 0.001$

[a] Three women and two men dropped from analysis due to missing values on covariables

AIDS Behav. Author manuscript; available in PMC 2019 July 25.

Table 4

Factors associated with current use of a more effective contraceptive method, odds ratios and 95 % confidence intervals from multivariable GEE logistic regression

Factors	More effective contraceptive method use			
	Women (N = 445)[a]		Men (N = 459)[a]	
	AOR	95 % CI	AOR	95 % CI
Gender equity score	1.03	0.94, 1.13	1.06	0.93, 1.21
Intervention site	1.94	1.00, 3.79	1.16	0.65, 2.08
Age (years)	0.96	0.93, 1.00	0.97*	0.93, 1.00
Marital/partner status				
Married/lives with partner, monogomous	ref		ref	
Married/lives with partner, polygynous	0.54**	0.36, 0.82	0.85	0.43, 1.67
Not married or living with partner	0.72	0.34, 1.50	0.17*	0.04, 0.71
Has > primary education	1.58	0.99, 2.52	1.86*	1.00, 3.45
Living children				
0–1	ref		ref	
2–3	2.84***	1.69, 4.78	1.20	0.57, 2.51
4 or more	3.88***	2.34, 6.42	2.28	0.67, 7.84
Desired fertility timing				
Wants no more children	ref		ref	
Wants a child in > 2 years	0.98	0.56, 1.74	1.48	0.75, 2.91
Wants a child in 6 mo-2 years	0.46*	0.25, 0.85	0.70	0.33, 1.48
HIV status of main partner				
Don’t know	ref		ref	
Negative	1.50	0.68, 3.30	2.03	0.54, 7.61
Positive	1.45	0.87, 2.42	2.28	0.69, 7.56
On or starting ARVs	1.25	0.72, 2.16	1.48	0.73, 2.99

* $p < 0.05$;

** $p \leq 0.01$;

*** $p \leq 0.001$

[a]Analyses exclude 28 (6 %) women and 16 (3 %) men who wanted pregnancy within 6 months or were infertile