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Risk of intimate partner violence and relationship conflict following couple-based HIV prevention counseling: Results from the Harlem River Couples Project

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Abstract

Heterosexual transmission of HIV often occurs in the context of intimate sexual partnerships. There is mounting evidence that couple-based HIV prevention interventions may be more effective than individual-based interventions for promoting risk reduction within such relationships. Yet, concerns have been raised about the safety of couple-based prevention approaches, especially with regard to the risk of intimate partner violence against women. While several international studies have examined the potential for adverse consequences associated with couple-based interventions, with inconsistent results, there is little data from U.S. studies to shed light on this issue. The current study analyzed data from a randomized trial conducted in New York City with 330 heterosexual couples to examine whether participation in couple-based or relationship-focused HIV counseling and testing (HIV-CT) interventions resulted in an increased likelihood of post-intervention break-ups, relationship conflicts, or emotional, physical or sexual abuse, compared to standard individual HIV-CT. Multinomial logistic regression was used to model the odds of experiencing change in partner violence from baseline to follow-up by treatment condition. A high prevalence of partner-perpetrated violence was reported by both male and female partners across treatment conditions, but there was no conclusive evidence of an increase in relationship dissolution or partner violence subsequent to participation in either the couple-based HIV-CT intervention or relationship-focused HIV-CT intervention compared to controls. Qualitative data collected from the same participants support this interpretation. HIV prevention interventions involving persons in primary sexual partnerships should be sensitive to relationship dynamics and the potential for conflict and take precautions to protect the safety of both male and female participants.

Keywords

intimate partner violence; couple-based counseling; HIV prevention

Introduction

In many parts of the world, the majority of new HIV infections occur through heterosexual transmission within the context of stable partnerships (Carpenter, Kamali, Ruberantwari, Malamba, & Whitworth, 1999; Godbole & Mehendale, 2005; Hugonnet et al., 2002; Mkandawire-Valhmu et al., 2013; UNAIDS, 2010). Recognition of this epidemiological trend, along with an understanding that unprotected sex involves behaviors and psychosocial determinants at the dyadic level, have led to the development of couple-based HIV prevention approaches (Jiwatram-Negrón & El-Bassel, 2014). Methods for recruitment and engagement of couples in research and practice have been developed (McMahon, Tortu, Torres, Pouget, & Hamid, 2003; Syvertsen et al., 2012; Witte et al., 2004) and a number of couple-based HIV prevention interventions have demonstrated risk reduction efficacy (Burton, Darbes, & Operario, 2010; Jiwatram-Negrón & El-Bassel, 2014; LaCroix, Pellowski, Lennon, & Johnson, 2013).

Despite these successes, couple-focused prevention programs have not been widely incorporated into existing HIV risk reduction programs and policies in the U. S. (LaCroix et al., 2013). One obstacle to implementation is the concern that participation by both members of a sexual dyad in couple-based counseling programs will lead to subsequent conflict, abuse or violence within the relationship, especially against women. This concern arises from evidence indicating that the majority of sexual and physical violence against women is perpetrated by intimate male partners (Campbell, 1989), with a clear link between partner violence and risk of HIV and other sexually transmitted diseases (STDs) (Maman, Campbell, Sweat, & Gielen, 2000). Couple-based HIV counseling might potentially trigger an adverse reaction by one or both partners to disclosure of sensitive information (e.g., previously undisclosed HIV infection; admission of infidelity) or to unresolved relationship issues (e.g., prior abuse; lack of trust; power dynamics) (Grinstead, Gregorich, Choi, & Coates, 2001; Kamenga et al., 1991; Kiarie et al., 2006; Mlay, Lugina, & Becker, 2008; Njau, Watt, Ostermann, Manongi, & Sikkema, 2012; Orne-Gliemann et al., 2013; Tabana et al., 2013). The potential for an adverse or violent reaction by one partner to disclosure of a previously unknown HIV diagnosis in the other has been documented in several studies (Coates et al., 2000; Gielen et al., 2000; Gielen, O'Campo, Faden, & Eke, 1997; Grinstead et al., 2001; Musheke, Bond, & Merten, 2013; Simoni et al., 1995; Tabana et al., 2013). A study conducted in three low-resource counties with over 1,100 couples receiving either HIV-CT or a health information control found that women (but not men) who received a new HIV diagnosis were at higher risk of physical abuse and marriage break-up (Grinstead et al., 2001). In a qualitative study in rural South Africa involving couples joint HIV testing, Tabana and colleagues found that a newly diagnosed HIV infection in the male partner resulted in avoidance of sexual intimacy on the part of the female partner, often resulting in male-perpetrated sexual coercion and physical abuse (Tabana et al., 2013).

Conversely, some evidence suggests that couple-based HIV counseling may promote healthy behaviors and have positive outcomes for partners and relationships, especially in regards to commitment, communication and problem-solving (El-Bassel & Wechsberg, 2012; McGrath et al., 2007). A psychoeducational group intervention for HIV-serodiscordant heterosexual couples was shown to reduce couples' depression and anxiety and improve marital

satisfaction (Pomeroy, Green, & Van Laningham, 2002). One study of HIV-serodiscordant couples from Rwanda found that involving the male partner in a male-focused HIV counseling program moderately reduced rates of coerced sex by the male partner (Roth et al., 2001). However, there is a general lack of empirical data in the extant literature on the effects of couple-based HIV counseling on subsequent intimate partner violence, especially in the U.S.

In this paper, we examined whether joint participation by both partners in a couple-based HIV counseling and testing (HIV-CT) intervention trial — the Harlem River Couples Project — increased or decreased the frequency of break-ups, relationship conflicts, and emotional, physical or sexual abuse compared to participants assigned to standard individual HIV-CT control. We also examine whether participation by women only in a relationship-focused HIV-CT resulted in increased relationship abuse, conflicts, or partner violence compared to the standard control. An additional exploratory analysis was conducted to assess whether selected subgroups were adversely affected by the couple-based intervention, in which we examined potential effect moderators based on individual demographics (i.e., age, education, racial/ethnic group, and drug use) and couple-level variables (i.e., relationship duration, marital status, power imbalance, and HIV status).

Methods

A total of 330 sexually active heterosexual couples (660 individuals) were recruited from Central and East Harlem and the South Bronx in New York City from March 2005 to September 2007. The original study (Harlem River Couples Project) was designed to assess the risk reduction efficacy of two experimental HIV-CT interventions among drug-involved couples (McMahon et al., 2013). Eligibility criteria were based almost exclusively on the female partner, and included: (a) 18 years of age or older, (b) self-reported use of crack/cocaine or heroin (injected or non-injected) in prior 30 days, (c) current male sex partner identified as primary partner for at least six months; (d) had unprotected vaginal or anal sex with primary partner in prior 30 days, (e) able to enlist male partner into the study, (f) would not feel threatened participating in the study with primary partner, (g) must not have participated in HIV/AIDS related study or attended HIV counseling and testing session in prior six months, (h) self-reported HIV seronegative, and (i) fluent in English or Spanish. Male partners of eligible women must have been 18 years of age or older to participate. We defined primary partner as “a husband, common-law husband, or steady boyfriend of at least six months”, which had good face validity in the context of the study population (Tortu, McMahon, Hamid, & Neaigus, 2000). Procedures for the recruitment and enrollment of couples into the study have been described elsewhere (McMahon et al., 2003).

Once enrolled, each member of the couple was administered (separately) a structured quantitative questionnaire by gender-matched bilingual interviewers. After completion of individual female and male baseline interviews, each couple was randomly assigned to one of the three treatment arms: (a) couple-based HIV-CT, (McMahon, Tortu, Rodriguez, & Hamid, 2006a), (b) woman-only relationship-focused HIV-CT, (McMahon, Tortu, Rodriguez, & Hamid, 2006b), or (c) woman-only National Institute on Drug Abuse (NIDA) standard HIV-CT (Wood, 2000) (control). The couple-based HIV-CT (CB-HIV-CT) was

administered jointly to both female and male members of each couple (dyadic sessions), whereas only women participated in the woman-only relationship-focused HIV-CT (WRF-HIV-CT) and NIDA HIV-CT interventions. The WRF-HIV-CT was included as a treatment arm in order to differentiate intervention effects due to content (relationship-focused vs. client-focused) from those due to modality (couple vs. individual). Allocation results were: CB-HIV-CT, 110 couples (33.3%); WRF-HIV-CT, 104 couples (31.5%); and NIDA HIV-CT standard-of-care control, 116 couples (35.2%). For couples randomized to one of the woman-only individual interventions, male partners were offered standard NIDA HIV-CT at terminal follow-up.

Follow-up assessments were conducted at three- and nine-months post-intervention. Assessments consisted of HIV and Hepatitis B and C testing and a quantitative survey using a combination of person-to-person and audio computer assisted self-interview (ACASI) techniques. Both female and male members of each couple were invited to attend follow-up assessments regardless of intervention allocation. Three-month and nine-month follow-up assessments were conducted either with women alone or simultaneously with both members of the couple (men were not permitted to attend follow-up unaccompanied by their female partner). Study protocols were approved by an academic institutional review board and registered with clinicaltrials.gov (NCT00325585).

Measures

Demographic variables were examined to describe the study sample. Treatment condition (couple-based HIV-CT, woman-only relationship-focused HIV-CT, or standard individual HIV-CT) served as the independent variable. Outcome measures used to assess adverse consequences included self-reported experience of partner-perpetrated violence, including emotional, physical and sexual violence, as well as relationship breakups, and self-report of relationship conflict due to participation in one of the treatment conditions. For experiences of violence we used dichotomous variables measuring the occurrence of partner-perpetrated self-reported abuse in the last 90 days, based on Conflict Tactics Scale-2 items (Straus, Hamby, Boney-McCoy, & Sugarman, 1996). Three separate variables were created, one for each type of violence experience; Emotional violence: "...did your partner do or say something on purpose to hurt you emotionally, such as insult or threaten you?" Physical violence: "...has your partner done anything to hurt you physically, such as hit, kick, choke, grab, or push you or throw something at you?" Sexual violence: "...has your partner used force or threats to make you have sex (oral, vaginal or anal) against your will?" In order to measure individual change in self-reported experiences of violence subsequent to participation in the interventions, a three-level ordinal variable was created for each type of abuse (emotional, physical, and sexual) by subtracting baseline scores from follow-up scores (calculated separately for three-month and nine-month follow-up assessment data). A score of 1.0 signified experiencing partner violence at follow-up but not at baseline (increase); -1.0 signified violence at baseline but not at follow-up (decrease); and a score of 0.0 indicated no change in partner violence from baseline to follow-up. Relationship breakups were based on female self-report. Intervention-related relationship conflict was measured as a dichotomous variable based on the following item: "Did participating in this study, the Harlem River Couples Project, cause any problems or conflicts in your relationship with

your main partner?” A positive response was followed by an open-ended item: “Please describe the kinds of problems or conflicts you experienced with your main partner as a result of participating in the Harlem River Couples Project.”

Statistical Analysis

Descriptive analyses of central tendency were used to characterize the sample at baseline. No differences were observed across treatment conditions in those lost to follow-up compared to those retained (McMahon et al., 2013). We therefore employed complete analysis in all inferential tests. Ordinal gain scores measuring change in self-reported experiences of partner violence subsequent to treatment were used as outcomes. Use of continuous or ordinal gain scores has been shown to provide unbiased, valid, and reliable estimates (Clarke, 2004; Mersman & Donaldson, 2000; Rogosa & Willett, 1983; Rogosa & Willett, 1985) as well as confer superior power in the presence of an autoregressive correlation structure (Overall & Tonidandel, 2010). Multinomial logistic regression was used to model the odds of experiencing change (increase or decrease) in partner violence from baseline to three-months and from baseline to nine-months post-intervention in the couple-based or women-only relationship-focused interventions compared to controls (Tables 2). Further multinomial logistic regression analyses were performed with interaction terms included in the models to test whether selected variables (e.g., age) served to moderate the relationship between intervention group (couple-based vs. control) and change in male-perpetrated violence (Table 3). Analyses were performed using IBM SPSS Statistics ver. 21 software. Tests were two-tailed with alpha set at 0.05. Power calculations were performed during the study design phase and are described elsewhere (McMahon et al., 2013).

Results

Baseline sample demographics and risk characteristics for the 330 heterosexual couples in the study are presented in Table 1. The majority (53%) of participants were Hispanic, with African Americans comprising the next largest group (35%). Forty-eight percent of participants had not completed high school and 75% percent reported a monthly individual income of less than \$900. Couples reported an average relationship duration of 7.6 years; 91% were either legally married (25%) or were in a “common-law” marriage (66%); 43% cohabitated. The prevalence of self-reported experiences of partner-perpetrated violence was notably similar for women and men. About the same proportion of men as women (89%) reported experiencing emotional violence perpetrated by their partner in the prior 90 days; slightly more men (43%) than women (39%) reported experiencing physical violence perpetrated by their partner; and more women (12%) than men (5%) reported sexual violence perpetrated by their partner over the same time period.

Over the data collection period, several men dropped out as the couples either broke up or the men did not attend interviews. At three months post-intervention, 257 women (93.5% of the sample) were still with their study partner; by nine months the number decreased to 234, indicating that by the end of the study 90.7% of the women were still with their original partner.

We modeled individual change from baseline (pre-intervention) to three-month follow-up and nine-month follow-up (post-intervention) on self-reported experiences of partner-perpetrated violence. Table 2 shows the proportion of women for whom male-perpetrated emotional, physical or sexual violence increased ($\uparrow\%$) from 0 to 1 events or decreased ($\downarrow\%$) from 1 to 0 events from baseline, by type of violence, treatment condition, and follow-up period. The percentage reporting no change is not displayed, but can be calculated ($100 - (\uparrow\% + \downarrow\%)$). Multinomial logistic regression odds ratios (OR) indicate the odds of belonging to a group with a more detrimental change in experience of violence in the experimental group relative to the control. An OR >1.0 indicates that the experimental group had a higher proportion of participants reporting an increase in violence or a lower proportion of participants reporting a decrease in violence (or both) relative to controls. The only OR that approached statistical significance for male-perpetrated violence was emotional violence in the couple-based HIV-CT group at nine months (OR 1.91, $p=0.06$). Thus, compared to controls, women in the couple-based intervention appeared to experience nearly twice the odds of a less beneficial change related to partner-perpetrated emotional violence. Further examination shows that this high OR was primarily driven by fewer women in the couple-based intervention (11%) reporting a *decrease* in emotional violence compared to the control condition (23%). The proportion of women who reported an *increase* in emotional violence at nine months post-intervention was similar in the two groups (couple-based, 5.4%; controls, 6.2%). Thus, whereas the couple-based intervention may have been less effective than the control in reducing emotional violence, it did not appear to increase emotional violence substantially among the couples. Yet, this finding should be viewed with caution, since the p-value of 0.06 was just above the alpha and we did not adjust for potential experiment-wise error in the analysis. With a significance level of 0.05, and multiple (126) inferential tests as shown in Tables 2, 3 and 4, there is a 99.8% probability of generating at least one statistically significant test result by chance alone (i.e., Type I error); in fact, we would expect to generate about six Type I errors in our results.

Comparison of the proportion of women reporting an increase ($\uparrow\%$) and decrease ($\downarrow\%$) in partner-perpetrated violence between the couple-based intervention and control condition reveals a pattern not apparent in the multinomial logistic regression results (Table 2). In five of the six comparisons (male-perpetrated emotional, physical and sexual violence at three-months and nine-months), the proportion of women in the sample reporting an increase in violence is higher for the couple-based intervention compared to controls, but the proportion of women reporting a decrease in violence is also greater for the couple-based intervention. For example, 15.6% of women in the couple-based condition reported an increase in physical violence from baseline to three-months post-intervention, whereas only 6.2% of women in the control condition reported an increase. In contrast, 22.2% of women in the couple-based intervention experienced a decrease in physical violence compared to only 16.7% of controls. These offsetting proportions were sufficient to render a non-significant multinomial logistic result (OR 1.14, $p=0.72$).

Yet, these patterns raise the possibility of an interaction effect; namely, that a third factor or factors serve to moderate the relationship between treatment condition and experiencing a change in partner-perpetrated violence. For example, perhaps *younger* women assigned to

the couple-based intervention were more likely to report a decrease in violence compared to *older* women, or compared to women of all ages in the control group. We examined the following variables as potential effect modifiers: female: age, education, race/ethnicity, ever injected drugs, current illicit drug use; male: age, education, race/ethnicity, ever injected drugs, current illicit drug use; couple: relationship duration, relationship power, marital status, cohabitation, HIV discordance (Table 3). Six interaction terms reached statistical significance, which matched the expected number of Type I errors deriving from the multiple test procedures. The only interaction term that came close to reaching a significance level based on a Bonferroni-adjusted alpha ($p < 0.001$), was couple HIV-serodiscordant status at the nine month assessment for emotional violence. Relative to controls, women in the couple-based intervention whose male partner was HIV-positive had 96% lower odds of experiencing a detrimental change in partner-perpetrated emotional violence than women whose partners were HIV-negative (AOR 0.04; CI: 0.004, 0.38; $p = 0.006$). With regard to men's self-report of female-perpetrated violence, there was no clear evidence of either a negative or positive effect of the couple-based or women-only relationship-focused interventions relative to the control group (Table 4). Nor was there any indication of potential interaction effects.

Three women and two men reported that participation in the HIV testing and counseling interventions caused problems in their relationship, and two women reported that participation in the study contributed to a breakup (Table 5). Of eleven women reporting breakups in the couple-based HIV-CT group, only one attributed the breakup to participation in the intervention. She reported that her partner beat her after an argument in which he refused to use the condoms given to them at the couple-based HIV-CT intervention; this event led to her breaking off the relationship. This same female participant reported instances of emotional, physical and sexual abuse by her partner at baseline and at the three-month assessment, but not after the breakup at the nine-month assessment. Ten women in the control group reported a breakup, one of whom stated that the counseling increased her awareness of HIV, which created animosity within the relationship when discussing HIV prevention with her partner. Of the 12 breakups reported among women in the Women-RF HIV-CT intervention, none were attributed to the intervention.

In addition to the woman who broke up with her partner after an argument and abuse stemming from participation in the couple-based intervention, four other participants reported relationship conflicts they attributed to the interventions. Two men (one in the Woman-RF and one in the control group) complained that the interventions led to concealment and distrust in the relationship. One woman in the Woman-RF intervention reported increased animosity with her partner resulting in her increased awareness of HIV risk and attempts to discuss the issue with her partner. Another in the control group stated that her partner became defiant and more insistent on curtailing his drug and sexual activities outside the relationship.

Discussion

Mounting evidence indicates that couple-based HIV prevention interventions may be more effective at promoting sexual and drug-related risk reduction than individual interventions

(Burton et al., 2010; Jiwatram-Negrón & El-Bassel, 2014; LaCroix et al., 2013). However, concerns have been raised regarding the safety of couple-based approaches, but with little evidence to shed light on the associated risk of adverse events, especially in the U.S. Despite the high prevalence of self-reported intimate partner violence in a sample of 330 heterosexual couples participating in a randomized trial of HIV counseling and testing interventions, our study revealed no clear evidence of either an increase or decrease in partner violence subsequent to participation in either a couple-based HIV-CT intervention or a woman-only relationship-focused HIV-CT intervention compared to a standard individual HIV-CT control. The one borderline finding regarding male-perpetrated emotional violence at nine-months post-intervention, if not a sampling (Type 1) error, does not indicate a harmful effect of the couple-based intervention, but more a lack of a beneficial effect compared to controls. Nor did the number of reported breakups or breakups attributed to the interventions differ across intervention conditions. Baseline rates of self-reported intimate partner violence were similar between men and women.

These quantitative findings were supported by qualitative responses to open-ended questions regarding the impact of the assigned interventions on subsequent conflicts or problems in the couple's relationship. Of 297 couples who completed at least one follow-up interview, only five (1.7%) reported experiencing relationship conflicts they attributed to participation in the trial interventions, of whom one was assigned to the couple-based joint counseling intervention (Table 5). This is not to minimize the experiences of these five individuals, including one who suffered physical abuse. Research and clinical practice, whether couple-based or individual-oriented, involving HIV-CT with persons in primary sexual relationships must ensure adequate safeguards that minimize potential harm to participants and clients (Jiwatram-Negrón & El-Bassel, 2014). Such safeguards include screening for IPV along with private and confidential opt-out for those affected, use of counselors with adequate training, established guidelines to deal with conflict resolution and partner violence, ongoing monitoring for risk of violence throughout the intervention, including safety planning for referrals or withdrawal. Our findings provide an estimate for the relatively low prevalence of intervention-induced conflicts when appropriate safeguards are implemented (McMahon et al., 2003).

The high levels of baseline partner violence victimization reported by both men and women in our survey are consistent with prior research. A national sample survey of 4,134 adolescents and young adults revealed that 44% of females and 36% of males reported experiencing IPV victimization, as defined by the Conflict Tactics Scale-2, by young adulthood (Halpern, Spriggs, Martin, & Kupper, 2009). In a survey of sexually active low-income Black and Hispanic adult men age 18–35 years, 41% reported IPV perpetration in the past year (Santana, Raj, Decker, La Marche, & Silverman, 2006). These data underscore the enormous need for programs and interventions that address partner violence and associated mental health comorbidities (Anderson, Campbell, & Farley, 2013; Bair-Merritt et al., 2014; Black, 2011; Campbell et al., 2008).

Self-reported experiences of intimate partner emotional and physical violence were similar by sex, indicating that a similar proportion of men and women perceived being afflicted by these types of violence — although it is important to note that our analysis did not measure

the frequency or intensity of partner-perpetrated violence, nor did it explore the relationship context of violence, retaliation, self-defense, power and control (Reed, Raj, Miller, & Silverman, 2010). Prior studies have also reported gender-equivalent IPV perpetration (or higher rates of female-perpetrated IPV) in national and community samples (Archer, 2000; Carney, Buttell, & Dutton, 2007; Felson & Cares, 2005; Fagan & Browne, 1994; Romans, Forte, Cohen, Du Mont, & Hyman, 2007; Whitaker, Haileyesus, Swahn, & Saltzman, 2007; White & Chen, 2002; Williams & Frieze, 2005). In a study involving mostly young Latino couples, Koniak-Griffen et al. (Koniak-Griffin, Lesser, Takayanagi, & Cumberland, 2011) also found that a similar proportion of men and women reported a history of physical abuse (~27.5%), although self-reported history of sexual abuse was nearly three times more prevalent among women than men (34.5% and 12.5%, respectively). This finding parallels our results, in which women were more than twice as likely as men to report partner-perpetrated sexual violence. A common practice in couple-based HIV prevention research and practice is to screen and exclude women at initial recruitment if there are indications of high risk for intimate partner violence, (Jiwatram-Negrón & El-Bassel, 2014; McMahon et al., 2003; Witte et al., 2004) but such screening might also be extended to the male partner.

Our findings are consistent with several international studies of pregnant women in antenatal care. Mohlala et al. (Mohlala, Boily, & Gregson, 2011) found no evidence of an increase in intimate partner violence among pregnant South African women receiving couple-based HIV-CT, and observed no occurrences of divorce or separation. In a randomized trial of 9,409 pregnant women in Zambia, those who received couple-based antenatal HIV testing and counseling were no more likely than individually-counselled women to report adverse social events, such as verbal or physical abuse, separation or divorce (Semrau et al., 2005). In a study of 1,943 pregnant women in Cameroon, Dominican Republic, Georgia and India, Orne-Gliemann et al. (Orne-Gliemann et al., 2013) reported no clear evidence for an increase in partner-perpetrated conjugal, emotional, verbal or physical violence due to participation in a relationship-focused post-test HIV counseling intervention compared to standard HIV-CT. Conversely, in a study examining adverse consequences for heterosexual couples in which one or both members participated in HIV counseling and testing, Grinstead et al. (Grinstead et al., 2001) reported a higher percentage of physical abuse and relationship breakups among partners receiving couple-based HIV-CT compared to those receiving individual HIV-CT. These divergent results are most likely due to cultural and normative differences across the study samples, as well as the different settings from which participants were recruited.

In the current study, moderation analysis revealed that women in HIV-serodiscordant partnerships who participated in the couple-based HIV-CT intervention had reduced odds of experiencing emotional violence compared to those in seroconcordant negative partnerships or who participated in the control condition. Roth et al. (Roth et al., 2001) found a similar pattern in a study of male-focused HIV counseling among Rwandan women and their primary male partners, in which the rates of coerced sex decreased only among couples with at least one HIV-infected partner. However, this pattern may hold only for HIV-serodiscordant couples in which the infected partner has previously disclosed HIV positive status; several qualitative studies found that previously undisclosed HIV infections that were revealed during couple-based HIV-CT, especially for women, led to abandonment, verbal

abuse and physical assault, although these occurred in a minority of cases (Gielen et al., 1997; Tabana et al., 2013). Of 49 women in Tanzania who disclosed their HIV-positive status after HIV-CT, two reported abandonment and two reported physical assault (Maman et al., 2003). It is of interest to note that a recent meta-analysis found that couple-based HIV-CT interventions were also most effective at increasing condom use when partners were HIV-serodiscordant (LaCroix et al., 2013).

This study has several limitations. All data were obtained by self-report, which is subject to reduced reliability and re-call bias (Johnson & Fendrich, 2005). Our use of audio computer-assisted self-interview (ACASI) techniques to collect data on partner violence may have reduced social desirability bias, but there may be systematic differences in the reliability of reporting partner violence by gender (Bohannon, Dosser, & Lindley, 1995; Reed, 2008). Several authors have suggested that men may be less willing than women to admit to being victims of intimate partner violence, and women may be more apt to identify themselves as perpetrators of violence (Caetano, Schafer, Field, & Nelson, 2002; Szinovacz & Egley, 1995). In addition, based on one of our eligibility criteria, women self-selected out of the study if they perceived any potential threat from a male partner. This may have resulted in selection bias, generating a sample with lower prevalence of male-perpetrated violence, especially severe violence. Thus, our results are only generalizable to couple-based interventions with similar screening criteria. Given that most couple-based HIV prevention interventions are not equipped to deal with couples characterized by extreme intimate partner violence and therefore routinely screen-out such couples, our findings generalize to those couples most targeted for such approaches. Another limitation of the study pertains to statistical power. With regard to our primary analyses (Tables 2 & 4), we had adequate statistical power to detect an odds ratio of change in violence by intervention condition of about OR 1.70 (or, equivalently, OR 0.60). Smaller effect sizes may not have been detected as statistically significant. It is important to emphasize that a statistically non-significant result should not be interpreted to indicate no effect or no difference between groups: failing to reject the null hypothesis is not the same as accepting the null. Thus, our study findings are best interpreted as contributing to the overall literature on the safety of HIV prevention interventions, in which we found no conclusive evidence of a deleterious effect resulting from participation in couple-based and relationship-focused HIV prevention counseling.

Despite these limitations, our findings have important implications for the advancement of couple-based approaches to HIV prevention science and practice. The bulk of the evidence pertaining to the safety of couple-based HIV prevention interventions comes from studies conducted in Africa, and the present study represents the first randomized trial to examine the relative safety of couples HIV counseling and testing in the U.S. Our findings reveal high baseline prevalence of self-reported emotional, physical, and sexual intimate partner violence among couples at high risk of HIV; yet, our quantitative and qualitative results are consistent with most prior research indicating no conclusive evidence of an increase in relationship violence, conflict, or breakups subsequent to participation in couple-based or relationship-focused HIV prevention interventions. Indeed, while the current study focused on the potential adverse consequences of couple-based HIV prevention counseling, recent evidence suggests that couple-based counseling may have some beneficial effects on client health and relationship function (El-Bassel & Wechsberg, 2012; McGrath et al., 2007;

Pomeroy et al., 2002). A meta-analysis on the effects of psychosocial or behavioral couple-oriented interventions found small but persistent positive effects on reduced depression and improved marital function for patients with chronic diseases, including HIV (Martire, Schulz, Helgeson, Small, & Saghafi, 2010).

It must be emphasized that health and service professionals providing both couple-based and individual HIV counseling should be trained in, and sensitive to, the experiences and dynamics of sexual partnerships, including gendered power and risk of partner violence (Musheke et al., 2013) and protocols should be put in place to assess and minimize relationship-related harms to study participants and clients (Jiwatram-Negrón & El-Bassel, 2014). Such procedures include transparency regarding the content and format of the study protocols and intervention; permitting both male and female partners to self-select out of the study or intervention if they are concerned about their safety; providing counselor mediation or referrals to partner notification programs for newly HIV diagnosed partners; diffuse tensions or conflicts that arise during joint counseling and avoid issues that may require more intensive therapy by trained professionals, thereby promoting positive experiences; and deliver sensitive intervention components separately to each member of the couple. As stated in the World Health Organization guidance on couples HIV testing and counseling, couples counseling should offer "...a safe and supportive environment in which a couple can discuss HIV risk issues and concerns, cope with their HIV test results, and begin to plan for the future of the relationship" (World Health Organization, 2012). To achieve this goal, studies involving couple-based, relationship-focused, and individual HIV prevention interventions for clients with both opposite-sex and same-sex intimate partners should routinely collect and analyze data to evaluate program safety.

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Table 1

Baseline sociodemographic and risk characteristics, by sex

Characteristic	Women (N=330)	Men (N=330)
Age (yr) ^a	38.4 ± 8.4	40.4 ± 8.1
Race/ Ethnicity		
Hispanic	167 (50.6%)	184 (55.8%)
Black (non-Hispanic)	112 (33.9%)	120 (36.4%)
White (non-Hispanic)	42 (12.7%)	17 (5.2%)
Black and Hispanic	4 (1.2%)	4 (1.2%)
Other	5 (1.5%)	5 (1.5%)
Completed high school or higher education	158 (47.9%)	183 (55.4%)
Residence		
Permanent	118 (35.8%)	126 (38.2%)
Transient (e.g., living temporarily with someone else, renting hotel, welfare boarding house)	165 (50.0%)	59 (17.8%)
Homeless (e.g., living in street, car or shelter)	47 (14.2%)	145 (43.9%)
Income type		
Job on or off the books	50 (15.2%)	115 (34.8%)
Social security, disability, pensions, V.A.	58 (17.6%)	51 (15.5%)
Welfare or workfare	173 (52.4%)	158 (47.9%)
Main partner	250 (75.8%)	209 (63.3%)
Family, friends, or acquaintances	177 (53.6%)	182 (55.2%)
Other legal or illegal activity	102 (30.9%)	188 (57.0%)
WIC checks, food stamps	256 (77.6%)	247 (74.8%)
Total average monthly income		
< \$300	53 (16.1%)	50 (15.2%)
\$300 – \$599	117 (35.5%)	111 (33.6%)
\$600 – \$899	82 (24.8%)	80 (24.2%)
\$900	77 (23.3%)	89 (27.0%)
Self-reported positive disease status		
HBV	33 (10.0%)	36 (10.9%)
HCV	100 (30.3%)	118 (35.8%)
HIV	0 (0%)	22 (6.7%)
Drug/Alcohol use in past 30 days		
Alcohol	200 (60.6%)	212 (64.2%)
Tobacco	300 (90.9%)	308 (93.3%)
Marijuana	149 (45.2%)	163 (49.4%)
Non-injected crack	189 (57.3%)	165 (50.0%)
Non-injected cocaine	143 (43.3%)	139 (42.1%)
Non-injected heroin	142 (43.0%)	144 (43.6%)
Injected drugs	110 (33.3%)	116 (35.2%)
Ever used injected illegal drugs	159 (48.2%)	181 (54.8%)
Relationship duration (y) ^a	7.6 ± 7.4	7.6 ± 7.4

Characteristic	Women (N=330)	Men (N=330)
Marital Status		
Single, never married	16 (4.8%)	19 (5.8%)
Married to current partner	85 (25.8%)	77 (23.3%)
Married, but not to current partner	6 (1.8%)	7 (2.1%)
Common-law marriage	214 (64.8%)	224 (67.9%)
Legally separated or divorced	4 (1.2%)	3 (0.9%)
Widowed	3 (0.9%)	0 (0%)
Other	2 (0.6%)	0 (0%)
Live with main partner	145 (43.9%)	140 (42.4%)
Experienced any partner-perpetrated violence prior 90 days		
Emotional violence	295 (89.4%)	296 (89.7%)
Physical violence	128 (38.8%)	141 (42.7%)
Sexual violence	39 (11.8%)	33 (4.9%)

Values expressed, unless otherwise indicated, as frequency (percentage)

^aValues expressed as mean \pm standard deviation

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Table 2

Change in male-perpetrated emotional, physical and sexual violence from baseline to follow-up, as reported by female partner (prior 90 days), by treatment condition and assessment period.

	3 months				9 months			
	↑%	↓%	OR [†] (95% CI)	p-value	↑%	↓%	OR [†] (95% CI)	p-value
Emotional Violence								
Couple-Based	10.0, 16.7		0.91 (0.44, 1.87)	p=0.79	6.2, 11.1		1.91 (0.98, 3.68)	p=0.06
Women-RF	6.7, 13.5		0.92 (0.28, 1.76)	p=0.79	6.0, 27.7		0.84 (0.42, 1.66)	p=0.62
Control	5.2, 10.4		1.0		5.4, 23.4		1.0	
Physical Violence								
Couple-Based	15.6, 22.2		1.14 (0.57, 2.29)	p=0.72	18.5, 24.7		0.83 (0.41, 1.70)	p=0.62
Women-RF	5.6, 16.9		0.97 (0.56, 1.69)	p=0.91	8.4, 16.9		0.79 (0.45, 1.36)	p=0.39
Control	6.2, 16.7		1.0		12.4, 12.8		1.0	
Sexual Violence								
Couple-Based	10.0, 13.3		0.97 (0.41, 2.31)	p=0.95	11.1, 9.9		0.95 (0.40, 2.24)	p=0.90
Women-RF	3.4, 7.9		0.92 (0.47, 1.80)	p=0.92	6.0, 6.0		0.71 (0.87, 0.42)	p=0.71
Control	5.2, 8.3		1.0		9.6, 7.4		1.0	

3 month: Couple-Based n=90, Women-RF n=89, Control n=96

9 month: Couple-Based n=81, Women-RF n=83, Control n=94

↑%: Percentage of sample reporting change from no abuse at baseline to abuse at follow-up

↓%: Percentage of sample reporting change from abuse at baseline to no abuse at follow-up

[†] Models the odds of increased experience of violence in the treatment condition relative to control from baseline to follow-up

Table 3

Tests of moderation effects on the relationship between participation in couple-based HIV-CT (vs. control) and male-perpetrated emotional, physical or sexual violence, by assessment period. Only interaction effect coefficients are shown; main effects and constant are not.

Moderator	3 months			9 months		
	Emotional	Physical	Sexual	Emotional	Physical	Sexual
Female:						
Age	0.96 (0.41)	0.98 (0.57)	1.02 (0.76)	1.03 (0.50)	1.05 (0.23)	1.10 (0.06)
Education [‡]	0.95 (0.94)	0.69 (0.60)	0.75 (0.75)	1.73 (0.43)	0.77 (0.72)	0.65 (0.47)
Race/ethnicity [†]						
Hispanic	0.98 (0.96)	2.97 (0.43)	2.50 (0.07)	2.60 (0.60)	0.12 (0.05)	0.09 (0.06)
Black	1.29 (0.64)	2.20 (0.58)	2.42 (0.24)	2.02 (0.70)	0.29 (0.26)	0.14 (0.13)
IDU (ever)	1.29 (0.78)	0.54 (0.38)	2.29 (0.34)	0.25 (0.04)	0.55 (0.46)	0.50 (0.43)
Current drug use	0.33 (0.28)	0.24 (0.15)	0.15 (0.16)	0.20 (0.03)	1.55 (0.55)	0.18 (0.08)
Male:						
Age	0.89 (0.04)	0.95 (0.52)	1.04 (0.51)	1.02 (0.67)	1.01 (0.90)	1.05 (0.36)
Education [‡]	0.47 (0.44)	5.24 (0.06)	1.62 (0.61)	2.14 (0.39)	0.81 (0.82)	1.35 (0.76)
Race/ethnicity [†]						
Hispanic	2.87 (0.09)	1.26 (0.64)	1.45 (0.62)	0.64 (0.50)	0.49 (0.34)	0.03 (0.03)
Black	1.31 (0.75)	1.11 (0.87)	0.26 (0.18)	1.44 (0.67)	1.63 (0.48)	0.19 (0.26)
IDU (ever)	1.69 (0.57)	0.65 (0.34)	4.26 (0.15)	1.21 (0.83)	1.24 (0.80)	6.21 (0.06)
Current drug use	3.97 (0.30)	1.94 (0.47)	0.49 (0.49)	1.26 (0.92)	2.38 (0.41)	1.15 (0.91)
Relationship:						
Duration (years)	0.96 (0.40)	0.99 (0.75)	0.98 (0.65)	1.01 (0.81)	0.97 (0.42)	0.94 (0.19)
Power	0.50 (0.38)	0.47 (0.29)	2.26 (0.38)	0.48 (0.30)	1.26 (0.75)	0.58 (0.44)
Marital status	1.58 (0.56)	1.18 (0.85)	0.69 (0.66)	1.19 (0.83)	0.79 (0.80)	0.76 (0.81)
Cohabitation	1.55 (0.73)	0.53 (0.52)	0.75 (0.82)	0.52 (0.59)	0.50 (0.67)	1.21 (0.89)
HIV discordant	0.36 (0.26)	0.10 (0.04)	1.11 (0.94)	0.04 (0.006)	0.34 (0.23)	0.12 (0.10)

3 month: Couple-Based n=86, Women-RF n=86, Control n=91

9 month: Couple-Based n=79, Women-RF n=78, Control n=88

[†]White/other is reference group

[‡]Completed high school education

Table 4

Change in female-perpetrated emotional, physical and sexual violence from baseline to follow-up, as reported by male partner (prior 90 days), by treatment condition and assessment period.

	3 months				9 months			
	↑%	↓%	OR [†] (95% CI)	p-value	↑%	↓%	OR [†] (95% CI)	p-value
Emotional Violence								
Couple-Based	9.3, 11.6		1.06 (0.46, 2.44)	p=0.89	10.1, 10.1		1.38 (0.63, 3.02)	p=0.42
Women-RF	3.5, 10.5		0.81 (0.39, 1.66)	p=0.56	5.1, 14.1		0.84 (0.40, 1.76)	p=0.65
Control	7.7, 11.0		1.0		8.0, 13.6		1.0	
Physical Violence								
Couple-Based	9.3, 22.1		0.58 (0.29, 1.15)	p=0.58	15.2, 16.5		0.84 (0.43, 1.63)	p=0.60
Women-RF	8.2, 15.3		0.73 (0.38, 1.39)	p=0.73	9.0, 20.5		0.58 (0.30, 1.10)	p=0.09
Control	18.7, 17.6		1.0		19.3, 15.9		1.0	
Sexual Violence								
Couple-Based	8.1, 11.6		0.77 (0.33, 1.84)	p=0.56	7.6, 6.3		1.10 (0.45, 2.67)	p=0.84
Women-RF	3.5, 10.5		0.62 (0.29, 1.30)	p=0.21	9.0, 3.8		1.44 (0.61, 3.40)	p=0.41
Control	6.6, 6.6		1.0		9.1, 9.1		1.0	

3 month: Couple-Based n=86, Women-RF n=86, Control n=91

9 month: Couple-Based n=79, Women-RF n=78, Control n=88

↑%: Percentage of sample reporting change from no abuse at baseline to abuse at follow-up

↓%: Percentage of sample reporting change from abuse at baseline to no abuse at follow-up

[†] Models the odds of increased experience of violence in the treatment condition relative to control from baseline to follow-up

Table 5

Frequency of relationship breakups and conflicts by treatment condition

Treatment Condition (N)	Breakups N (%)	Conflicts Due to Intervention	
		N,	Description of conflict
Couple-Based (90)	11 [†] (12.2)	1	<i>Female #346</i> : "Condoms was the issue that sparked the argument; he did not want to try the condoms we were given at the intervention, which led to him beating me up"
Women-RF (89)	12 [‡] (13.5)	2	<i>Male #66</i> : "We began to distrust each other because we would not reveal our answers to some sex questions." <i>Female #449</i> : "Increased my awareness of HIV which increased animosity with my partner when I discussed HIV prevention with him."
Control (96)	10 [‡] (10.4)	2	<i>Male #149</i> : "My partner has not been truthful with me about her test results obtained in the program. I suspect she is hiding something." <i>Female #199</i> : "Partner became more insistent about his sex activities and his current drug use."

[†]One of the reported breakups was directly related to participation in the intervention

[‡]None of the reported breakups were directly related to participation in the intervention

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