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Quality of Relationship and sexual risk behaviors among HIV couples in Lusaka, Zambia

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Abstract

Relationship quality and partner dynamics provide important insights into understanding sexual behavior within HIV sero-positive and -discordant couples. Individuals in long-term partnerships may be vulnerable to HIV/STI infection within their relationships due to misperceptions of their partners risk behaviors and potential concurrent (e.g., extramarital, non-primary) sexual partnerships. This study sought to examine relationship quality among HIV sero-positive and –discordant couples in Zambia, and its association with safer sex behavior.

This study utilized data drawn from an ongoing translational study, The Partnership II Project – a couples based sexual risk reduction intervention in Lusaka, Zambia. Couples (n = 240) were assessed on demographics, relationship quality, and sexual risk behavior. Overall, couples perceiving their relationships more positively engaged in less risky sexual behavior (i.e., more condom use (b = .011, t = 3.14, $p = .002$) and fewer partners ($\chi^2 = 11.4$, $p = .003$). Within the dyad, condom use was "actor driven," indicating that the association between relationship quality and condom use did not depend on the partner's evaluation of the relationship. Safer sex behavior was positively influenced by communication about condoms. Results support the paradigm shift from prevention strategies with HIV positive and at-risk individuals to concentrated efforts addressing male-female dyads, and suggest that interventions to address the role of couples' relationship quality, a modifiable target for decreasing sexual risk behavior, are needed.

Keywords

HIV; Couples; Sexual Risk; Relationship; Quality

Introduction

Sub-Saharan Africa continues to bear the largest share of the global HIV burden (68%) and the majority of new infections, an estimated 1.8 million in 2009 (UNAIDS, 2010). As this generalized epidemic evolves, increasing numbers of people living with HIV/AIDS (PLWA) are in long-term or committed partnerships (Rispel et al, 2012; Pereira et al, 2011) and the number of serodiscordant couples and infections acquired through heterosexual contact are anticipated to continue to increase (CDC, 2010; UNAIDS, 2010). The sub-Saharan nation of Zambia is among those countries with the highest HIV prevalence; an estimated 980,000 people were living with HIV in 2009 (UNAIDS, 2010) and new infections are

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predominantly acquired through heterosexual contact (Zambia Country Report, 2012). HIV transmission within mutually monogamous relationships represents 21% of new infections, with rates as high as 60% in urban areas (UNAIDS, 2010). Slightly more than half of all PLWAs are women, and despite increased vulnerability to infection (Miller et al, 2009), married women consider themselves less likely to be at risk of HIV than unmarried women (Do and Meekers, 2009). Recent research suggests that the quality of relationships and partner dynamics provide important insights into understanding sexual behavior within couples living with HIV (Pequegnat and Bray, 2012).

Couples are often inconsistent in the use of sexual risk reduction strategies and may put their mental health, or satisfaction of emotionally-driven needs, over their physical health, or prevention of HIV infection, as evidenced by decreasing condom use in increasingly intimate, steady, and committed relationships (Warren, Harvey, Agnew, 2012). Condom use is further complicated by desires for children (Rispel et al, 2012; Stephenson et al, 2011). Currently, marriage is the primary HIV risk factor for women, worldwide (Marlow, Tolley, Kohil, and Mehendale, 2010; Dunkele et al, 2008). Agreements to forgo condom use and reliance on mutual fidelity for HIV prevention in long-term partnerships (Warren, Harvey, Agnew, 2012) may actually increase vulnerability to HIV/STI infection due to misperceptions of a partners' risk behaviors and potential concurrent (e.g., extramarital, non-primary) sexual partnerships (Njau et, 2011). Agreements to mutual monogamy associated with increasing intimacy and relationship bonding (Warren, Harvey, Agnew, 2012) may run counter to disease prevention or engagement in safer sex among HIV sero-positive and -discordant couples. While among HIV seropositive concordant couples, better communication may be related to decisions to discontinue condom use, condom use may also be impacted by partners' medication use, viral load and history of resistance (Cohen et al., 2011). Clearly, positive prevention, the reduction of transmission by PLWAs, is essential.

Strategies for the prevention of HIV and STI infections include condom use, mutual monogamy and HIV/STI testing (CDC, 2011). Communication is a key strategy for HIV prevention (Sales et al, 2012) among sero-concordant and discordant couples (Persson, 2009) and within homosexual relationships, the strategy of negotiated safety (Kippax et al, 1997) has been demonstrated to be relatively effective (Jin et al, 2009). Partners who are more comfortable talking openly about sex – beyond disease or pregnancy – are also more likely to use contraceptives (Warren, Harvey, Agnew, 2012). These couples may also perceive their relationships more positively, as having characteristics associated with relationship quality e.g., more satisfaction, greater sense of cohesion, more affection, increased use of communication to achieve consensus. However, marriage may also carry taboos regarding communication about contraception, HIV/STIs and risk reduction strategies (Marlow et al, 2010), and may be restricted by gender power imbalances and cultural norms for fidelity (Marlow et al, 2010; Njau et al, 2011). Overall, it is unclear what the impact of relationship quality is on sexual communication and safer sex practices within heterosexual HIV couples.

This study sought to examine relationship quality among HIV sero-positive and – discordant couples in Zambia. It was hypothesized that couples perceiving their relationships more positively, i.e., having higher satisfaction, a greater sense of cohesion, more affection, increased use of communication to achieve consensus, would be engaging in less risky sexual behavior, i.e., increased condom use and decreased multiple partnering. In addition, it was hypothesized that safer sex behavior, here defined as condom use, would be positively influenced by communication about condoms, and negatively influenced by intimate partner violence (Swan and O'Connell, 2011). It was theorized that study outcomes could guide the

development of interventions to enhance relationship quality and increase positive prevention in this population.

Methods

Data was drawn from an ongoing translational study, The Partnership II Project – a couples-based sexual risk reduction intervention in Lusaka, Zambia. Participants (n = 480) were serodiscordant (N = 36) and seroconcordant (n = 204) heterosexual couples recruitment from six Community Health Clinics (CHCs) in the urban Lusaka area. Participants were 18 years of age or older, sexually active within the last 30 days, and in a couple relationship for 6 months or more with at least one HIV seropositive member. Prior to study onset, ethical review and approval was obtained from the University of Miami Miller School of Medicine Institutional Review Board and the University of Zambia Research Ethics Committee.

Approximately 30% of couples screened for enrollment were not eligible due to lack of 6 month "couple" status or lack of sexual activity within the previous month. All consents and assessments were conducted in English, Nyanja or Bemba, the primary local languages in Lusaka, and all Zambian study staff were fluent in all three languages. Following provision of informed consent and enrollment, both couple members completed a baseline assessment of sexual and demographic data using Audio Computer Assisted Self-Interview (ACASI). HIV serostatus was verified, and participants with unknown serostatus were referred for Voluntary Counseling and Testing (VCT) prior to enrollment. Due to distress associated with an HIV diagnosis, participants newly testing HIV seropositive were not eligible for two weeks post-diagnosis. Participants were compensated for time and travel expenses (K50,000 Zambian Kwacha, ~US$10).

Measures

Demographics assessment included age, educational level, employment, HIV serostatus, date of HIV diagnosis, marital status, children's serostatus and number of children. Participants specified reproductive intentions, e.g., planning for children, actively attempting to conceive, or currently pregnant.

Sexual activities questionnaire—This 55-item scale was adapted from the Sexual Risk Behavior Assessment Schedule (SERBAS). Responses indicated the frequency of sexual intercourse in the past month with primary and non-primary partners and the number of non-primary partners.

Relationship quality—The Dyadic Adjustment Scale (DAS; Spanier 1976) is a 32 item measure used to assess couples' relationship quality (range = 0–151), with higher scores indicating higher relationship quality. Four subscales from the DAS, Satisfaction, Cohesion, Consensus, Expression of affection, were used with the total score. The DAS has demonstrated high reliability for the total measure (Cronbach's α = .96) and each subscale (Cronbach's α = .73–.94).

Risk reductions strategies—This instrument assessed frequency of use of specific risk reduction strategies. Responses used an interval scale of frequency of strategy use in the last month; strategies included discussion of condom use with partners. In addition, participants provided an assessment of condom use using a 5-point Likert scale, 5 = Every time, 4 = Almost every time, 3 = Sometimes, 2 = Almost never, and 1 = Never. Condom use assessment was drawn from this measure.

Intimate partner violence (IPV)—A modified version of the 17-item Conflict Tactics Scale (CTS; Strauss, 1979) was used to assess incidents of IPV. Participants reported IPV over the previous month (scored never, more than once in a month, two or three times) along a behavioral continuum in the primary relationship. Responses to the scale were categorized as indicative of one of four types of behaviors: positive communication, negative communication, violence or extreme violence.

Statistical Analyses

Univariate (i.e., frequencies, means, standard deviations) and multivariable (i.e., t-tests, chi-square tests of independence, ANOVA) analyses were conducted to examine relationships between demographic and behavioral variables and relationship quality. Multiple partnering and communication about condom use were assessed using individual-level bivariate analyses.

Due to the dyadic nature of condom use, the impact of relationship quality on condom use was estimated using mixed multilevel modeling. Intraclass correlations were computed to confirm nonindependence of condom use, and distinguishability by gender was tested using a deviance test (−2 log likelihood of model without gender minus −2 log likelihood of the model including gender main effects and interactions). The actor-partner interdependence model (APIM) (Kenny, Kashy, & Cook, 2006) was used to estimate the respective effects of participant's own (actor) and their partner's (partner) assessment of relationship quality on condom use. Effects are reported as standardized and non-standardized regression coefficients, along with t-statistics and corresponding significance test results. All statistical analyses were performed using IBM Statistical Package for the Social Sciences (SPSS) v. 19.

Results

Demographics

Participants (n = 480; 240 couples) were 38 years old, the majority (n = 436, 91%) earning less than 1.5 million Kwacha (~ US$ 300) per year. Most lived with their primary partner (n = 408, 85%) and had children (n = 433, 90%). Nearly one third of participants (n = 155, 32%) reported that they were pregnant or actively trying to become pregnant. Four hundred forty-four (92%) participants were HIV-seropositive and 36 (8%) seronegative, resulting in 204 seroconcordant and 36 serodiscordant couples. Neither Condom use ($t(238) = .48$, $p = .63$) nor relationship quality ($t(238) = .79$, $p = .43$) differed between seroconcordant and discordant couples. Additionally, men and women did not differ in their perceptions of the quality of their relationship ($t(478) = .91$, $p = .36$).

Relationship quality and multiple partners

In total, 31 participants (7%) reported having additional non-primary sexual partners outside their primary relationship. Men (n = 26, 11%) were 4.7 times more likely than females (n = 5, 2%) to have reported multiple partners in the past month [OR = 5.7, 95% CI = (2.15, 15.14)]. Of those participants engaging in sex outside the primary relationship, only three (two men and one woman) had partners who were aware of their behavior. There was no difference in age between those who endorsed multiple partners and those who did not ($t(478) = .17$, $p = .87$). Relationship quality was compared between participants who reported having multiple partners and those who did not. The results of this analysis are presented in Table 2. Participants with multiple partners reported similar levels of quality in their primary relationship in comparison with those without additional partners. However, when relationship quality was divided into tertiles, (low, medium and high quality) those reporting

the highest relationship quality were the least likely to endorse sex outside their primary relationship (see Table 1).

Relationship quality and condom use

Overall, consistent condom use, at every sexual encounter, was reported by 95 couples (40%) and mean condom use was high (m = 4.1, 4.0 = "Almost every time"). The intraclass correlation (ICC) for condom use was 0.36 (Wald = 6.3, $p < .001$), indicating that condom use within couples was not independent. The actor-partner interdependence model was used to evaluate the relative contribution of participants' own assessment of relationship quality ("actor effect") and his/her partner's assessment of quality ("partner effect") on self-reported condom use. Dyads were determined to be indistinguishable by gender (χ^2 (4, n = 240) = 4.91, $p = .29$), indicating that the effect of relationship quality on condom use did not differ between men and women. Because intimate partner violence, age, and reproductive intentions (pregnancy or intentions to become pregnant) were also likely to impact condom use, these variables were included in addition to relationship quality. Effects were evaluated for the overall relationship quality score, and then repeated for each relationship subscale. Table 3 presents the results of this analysis, including standardized and non-standardized regression coefficients.

Increases in participants' reports of relationship quality, including consensus, affection, and cohesion subscales, predicted increases in his or her condom use. Only the actor effects predicted the total relationship quality score and each subscale score, indicating that the relationship between quality and condom use was "actor driven" and did not depend on the partner's evaluation of the relationship. Interaction effects between actor and partner scores were not significant, indicating that partner scores did not moderate the relationship between actor scores and actor-reported condom use. Taken together, actor and partner effects accounted for 5% of the variance in condom use (Pseudo-R^2 = .05, χ^2 (5) = 20.09, $p = .001$).

Finally, the frequency of communication regarding condom use between partners was not correlated within the dyad (ICC = .10, Wald = 1.6, $p = .11$) and did not differ between men and women (t(478) = 1.3, $p = .19$). The number of times couples reported communicating about condom use was not related to the quality of the relationship (r = −.002, $p = .96$), but was correlated with increased condom use (r = .21, $p < .001$).

Discussion

This study examined the impact of the quality of relationship on sexual behavior among HIV sero-positive and – discordant couples in Zambia, and found that that couples perceiving their relationships more positively engaged in less risky sexual behavior. In addition, as hypothesized, safer sex behavior was positively influenced by communication about condoms and negatively influenced by intimate partner violence. As anticipated, reproductive intentions had a negative impact on safer sex behavior. Finally, each couple members' perceptions of the relationship's quality exerted a unique influence on their own safer sex behavior, such that each member of the sexual dyad represented an independent influence on sexual risk within the couple.

This study examined the influence of the perceived quality of a couple's relationship as a predictor of condom use, utilizing both a dyadic analysis and the actor-partner model. Increasingly, dyadic analyses (e.g., Burton et al., 2010) and analyses (e.g., el Bassel et al., 2012) are being utilized in the assessment of couple interventions. Interestingly, the current study identified a link between quality of relationship and condom use, in which each member of the couple represented an independent determinant of condom use by virtue of

their perception of the quality of their relationship. In addition, couples reporting lower relationship quality were more likely to have a member engaging in multiple partnering. These outcomes suggest that lack of agreement within a couple on the quality of their relationship may also be associated with decreased condom use behavior within the couple and increased multiple partners outside the relationship. Results support literature promoting influencing sexual behaviors through interventions that address improving the quality of a couple's relationship and relationship dynamics (Pequegnat and Bray, 2012).

Communication about condoms, a key element in HIV prevention (Sales, 2012), was associated with condom use. However, in contrast to previous studies (Warren, Harvey, Agnew, 2012) the quality of the relationship was not associated with condom-focused communication. Established couples with higher quality of relationship may no longer need to engage in repeated discussions of condom use as it has become an established practice. Furthermore, monogamous relationships may require less complicated communication about condoms than those in which one or both members have multiple partners they may wish to conceal. This finding supports studies targeting condom negotiation within high risk sero-concordant and – discordant couples (Stephenson et al, 2011; Marlow et al, 2010; Roth et al, 2001). As relationships may be protective but also carry the risk of infection in the heterosexual context, the negotiation of condom use should continue to receive attention within long-term couples.

Interestingly, as found previously (e.g., Mark et al, 2007) seropositive and serodiscordant couples reported comparable levels of relationship quality (Persson, 2008) and similar levels of sexual risk behavior. The similarity of condom use between seropositive and serodiscordant couples in this community based sample merits further examination. An important component of these findings relates to the serostatus of the sample, the majority of whom were HIV sero-concordant couples in which one or both may have been on antiretroviral therapy (ART). Future studies should examine the influence of ART on sexual risk behavior.

Surprisingly, moderate relationship quality was associated with multiple partners, such that these couples, in comparison with high and low quality groups, were the most likely to have additional partners. Though time in relationship was not assessed, it is conceivable that this outcome was influenced by the length of couples' relationships or the cultural context. Moderate satisfaction may have been associated with the midpoint of the relationship, the period between the novelty of a new relationship and the companionate phase of an older relationship. Studies should examine differences between time within the relationship and its impact on relationship quality and multiple partnering. Consistent with previous studies, the frequency of reported multiple partnerships was relatively low (Eaton and van Der Stratten, 2009).

Limitations

Recruitment for this study was restricted to HIV seropositive and serodiscordant couples, and therefore limited possible analyses of sexual behavior in comparison with HIV-seronegative couples. In addition, the majority of participants in this study were in HIV positive seroconcordant partnerships, precluding detailed analyses among sero-discordant couples. While ACASI was used to promote more honest reporting, extramarital sexual relations may have been underreported and limit the conclusions. Finally, examination of the relationship between relationship length and sexual risk communication and behavior was not possible.

Conclusion

Couples interventions are essential to containment of the epidemic. Results of this study support the paradigm shift from prevention strategies with HIV positive and at risk individuals to concentrated efforts on male-female dyads (Pequegnat and Bray, 2012; El-Bassel and Wechsberg, 2012) and suggest that interventions to address the role of couples' relationship quality, a modifiable target for decreasing sexual risk behavior, are needed. The relational dynamics within HIV positive and discordant partnerships and their contribution to protective sexual behavior or transmission within the couples context represents an important framework for prevention. Future studies are needed to explore the elements of the sexual and relational dyad amenable to use for increasing the impact of prevention interventions. Finally, as recent research has illustrated the impact of antiretroviral therapy on the reduction of HIV transmission (Cohen et al., 2011), studies exploring couples' perceptions of the risks associated with reduced condom use and the potential for condom disinhibition will be critical to ensure prevention.

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References

Albarracin D, Tannenbaum MB, Glasman LR, Rothman AJ. Modeling structural, dyadic, and individual factors: The inclusion and exclusion model of HIV related behavior. AIDS Behav. 2010; 14:S239–S249. Doi: http://dx.doi.org/10.1007/s10461-010-9801-1.

Burton J, Darbes LA, Operario D. Couples-focused behavioral interventions for prevention of HIV: systematic review of the state of evidence. AIDS Behav. 2010; 14:1–10. Doi: http://dx.doi.org/10.1007/s10461-008-9471-4. [PubMed: 18843530]

Centers for Disease Control. CDC Fact Sheet: Estimates of new HIV infections in the United States, 2006 – 2009. 2011. Retrieved from http://www.cdc.gov/nchhstp/newsroom/docs/HIV-Infections-2006-2009.pdf

Centers for Disease Control and Prevention. HIV/AIDS Statistics and Surveillance. Basic Statistics. 2007. Retrieved from: http://www.cdc.gov/hiv/topics/surveillance/basic.htm

Cohen MS, Chen YQ, McCauley M, Gamble T, Hosseinipour MC, Kumarasamy N, Flemming TR. Prevention of HIV-1 infection with early antiretroviral therapy. The New England Journal of Medicine. 2011; 365(6):493–505. Doi: http://dx.doi.org/10.1056/NEJMoa1105243. [PubMed: 21767103]

Do M, Meekers D. Multiple sex partners and perceived risk of HIV infection in Zambia: Attitudinal determinants and gender differences. AIDS Care. 2009; 21(10):1211–1221. Doi: http://dx.doi.org/10.1080/09540120902730047. [PubMed: 20024696]

Dunkle KL, Stephenson R, Karita E, Chomba E, Kayitenkore K, Vwalika C, Greenberg L, Allen S. New heterosexually transmitted HIV infections in married or cohabiting couples in urban Zambia and Rwanda: An analysis of survey and clinical data. Lancet. 2008; 371:2183–91. Doi: http://dx.doi.org/10.1016/S0140-6736(08)60953-8. [PubMed: 18586173]

Eaton LA, West TV, Kenny DA, Kalichman SC. HIV transmission risk among HIV seroconcordant and serodiscordant couples: Dyadic process of partner selection. AIDS Behav. 2009; 13:185–195. Doi: http://dx.doi.org/10.1007/s10461-008-9480-3. [PubMed: 18953645]

El-Bassel N, Wechsberg WM. Couple-based behavioral HIV interventions: Placing HIV risk-reduction responsibility and agency on the female and male dyad. Couple and Family Psychology: Research and Practice. 2012; 1(2):94–105. Doi: http://dx.doi.org/10.1037/a0028890.

Jin F, Crawford J, Prestage G, Garrett P, Zablotska I, Imrie J, Kippax S, Kaldor J, Grulich A. Unprotected anal intercourse, risk reduction behaviours, and subsequent HIV infection in a cohort of homosexual men. AIDS. 2009; 23(2):243–252. [PubMed: 19098494]

Jones DL, Weiss SM, Chitalu N, Mumbi M, Vamos S, Villar-Loubet O, Waldrop-Valverde D. Sexual Risk Reduction among Zambian Couples. SAHARA J: Journal of Social Aspects of HIV/AIDS. 2009; 6:69–75. Doi: not available.

Kippax S, Noble J, Prestage G, Crawford J, Campbell D, Baxter D, Cooper D. Sexual negotiation in the AIDS era: Negotiated safety revisited. AIDS. 1997; 11(2):191–197. [PubMed: 9030366]

Graham BS. Measuring dyadic adjustment: New scales for assessing the quality of marriage and similar dyads. Journal of Marriage and the Family. 1976; 38(1):15–28. Doi: http://dx.doi.org/10.2307/350547.

Harvey SM, Kraft JM, West SG, Taylor AB, Pappas-DeLuca KA, Beckman LJ. Effects of a health behavior change model-based HIV/STI prevention intervention on condom use among heterosexual couples: A randomized trial. Health Education and Behavior. 2009; 36(5):878–894. Doi: http://dx.doi.org/10.1177/1090198108322821. [PubMed: 18784350]

Mark KE, Meinzen-Derr J, Stephenson R, Haworth A, Ahmed Y, Duncan D, Westfall A, Allen S. Contraception among HIV concordant and discordant couples in Zambia: A randomized controlled trial. Journal of Women's Health. 2007; 16(8):1200–1210. Doi: http://dx.doi.org/10.1089/jwh.2006.0238.

Marlow HM, Tolley EE, Kohil R, Mehendale S. Sexual communication among married couples in the context of a microbicide clinical trial and acceptability study in Pune, India. Culture, Health & Sexuality. 2010; 12(8):899–912. Doi: http://dx.doi.org/10.1080/13691058.2010.508843.

Miller AN, Golding L, Kyalowa N, Wambua M, Mutua E, Kitizo MN, Rubin DL. Couples' communication on sexual and relational isues among the Akamba in Kenya. African Journal of AIDS Research. 2009; 8(1):51–60. Doi: http://dx.doi.org/10.2989/AJAR.2009.8.1.6.719.

Njau B, Watt MH, Ostermann J, Manongi R, Sikkema KJ. Perceived acceptability of home-based couples voluntary HIV counseling and testing in Northern Tanzania. AIDS Care. 2012; 24(4):413–419. Doi: not available. [PubMed: 21939369]

Pequegnat W, Bray H. HIV/STD Prevention interventions for couples and families: A review and introduction to the special issue. Couple and Family Psychology: Research and Practice. 2012; 1(2):79–93. Doi: http://dx.doi.org/10.1037/a0028682.

Pereira M, Dattilio FM, Canavarro MC, Narciso I. Couple-focused interventions for HIV-serodiscordant couples during transition to motherhood. Contemp Fam Ther. 2011; 33:143–160. Doi: http://dx.doi.org/10.1007/s10591-011-9152-8.

Persson A. Sero-silence an sero-sharing: Managing HIV in serodiscordant heterosexual relationships. AIDS Care. 2008; 20(4):503–506. Doi: http://dx.doi.org/10.1080/09540120701787487. [PubMed: 18449830]

Rispel LC, Cloete A, Metcalf CA, Moody K, Caswell G. 'It [HIV] is part of the relationship': Exploring communication among HIV-serodiscordant couples in South Africa and Tanzania. Culture, Health & Sexuality. 2012; 14(3):257–268. Doi: http://dx.doi.org/10.1080/13691058.2011.621448.

Roth DL, Stewart KE, Clay OJ, van der Straten A, Karita E, Allen S. Sexual practices of HIV discordant and concordant couples in Rawanda: Effects of a testing and counseling programme for men. International Journal of STD & AIDS. 2001; 12(3):181–188. Doi: http://dx.doi.org/10.1258/0956462011916992. [PubMed: 11231872]

Sales JM, Lang DL, DiClemente RJ, Latham TP, Wingood GM, Hardin JW, Rose ES. The mediating role of partner communication frequency on condom use among African American adolescent females participating in an HIV prevention intervention. Health Psychology. 2012; 31(1):63–69. Doi: http://dx.doi.org/10.1037/a0025073. [PubMed: 21843001]

Spanier GB. Measuring dyadic adjustment: New scales for assessing the quality of marriage and similar dyads. Journal of Marriage and Family. Feb; 1976 38(1):15–28. Doi: http://dx.doi.org/10.2307/350547.

Stephenson R, Vwalika B, Greenberg L, Ahmed Y, Vwalika C, Chomba E, Kilembe W, Tichacek A, Allen S. A randomized controlled trial to promote long-term contraceptive use among HIV-serodiscordant and concordant positive couples in Zambia. Journal of Women's Health. 2011; 20(4):567–574. Doi: http://dx.doi.org/10.1089/jwh.2010.2113.

Swan H, O'Connell DJ. The impact of intimate partner violence on women's condom negotiation efficacy. Journal of Interpersonal Violence. 2011:1–18. Doi: not available.

UNAIDS. Report on the Global AIDS Epidemic 2010. 2010. Retrieved from http://www.unaids.org/globalreport/Global_report.htm

Warren JT, Harvey SM, Agnew CR. One love: Explicit monogamy agreements among heterosexual young adult couples at increased risk of sexually transmitted infections. Journal of Sex Research. 2012; 49(2–3):282–289. Doi: http://dx.doi.org/10.1080/00224499.2010.541952. [PubMed: 21191869]

Republic of Zambia & National AIDS Council. Zambia Country Report: Monitoring the Declaration of Commitment on HIV and AIDS and the Universal Access, Biennial Report March 31st 2012. 2012. Retrieved from http://www.unaids.org/en/dataanalysis/monitoringcountryprogress/progressreports/2012countries/ce_ZM_Narrative_Report.pdf

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Table 1

Demographic and behavioral variables compared by tertiles of relationship satisfaction.

	Total n(%)m(sd)	**High n = 146**	**Medium n = 167**	**Low n = 167**	**X^2, F, *p***
Age	38(8.3)	37.3(7.9)	38.4(7.4)	39.5(9.4)	2.6, .07
Income (Yearly)					2.5, .28
<1,500,000 Kwatcha	436(91%)	134(92%)	147(88%)	155(93%)	
1,500,000 K or More	44(9%)	12(8%)	20(12%)	12(7%)	
Living Arrangement					1.8, .41
Alone	72(15%)	20(14%)	30(18%)	22(13%)	
With Partner	408(85%)	126(86%)	137(82%)	145(87%)	
Children					3.4, .18
Yes	433(90%)	15(10%)	11(7%)	21(13%)	
No	47(10%)	131(90%)	156(93%)	146(87%)	
Serostatus					2.7, .26
Positive	444(92%)	133(91%)	152(91%)	159(95%)	
Negative	36(8%)	13(9%)	15(9%)	8(5%)	
Pregnant/Trying to Become Pregnant					4.4, .11
Yes	155(32%)	44(30%)	64(38%)	47(28%)	
No	325(68%)	102(70%)	103(62%)	120(72%)	
Multiple Partnering					**11.4, .003**
Yes	31(7%)	2(1%)	18(11%)	11(7%)	
No	449(94%)	144(99%)	149(89%)	156(94%)	

Table 2

Relationship satisfaction and multiple partners.

	No multiple partners M (sd)	**Yes multiple partners M (sd)**	**t(478 df), *p***
Total	104.8(15.3)	100.8(11.9)	1.8, .08
Consensus	53.5(10.0)	50.4(8.2)	1.7, .08
Satisfaction	24.5(5.0)	23.6(6.1)	.87, .38
Expression of Affection	8.5(2.5)	8.4(4.3)	.23, .82
Dyadic Cohesion	18.3(5.1)	18.4(4.3)	−.07, .94

Table 3

Multilevel regression coefficients estimating actor and partner effects of relationship satisfaction on self-reported condom use.

	b(se)	β	t(df)
Intercept^	4.82(.12)		
IPV^	.193(.11)		1.8(435)
Reproductive Intentions^	.244(.12)		2.0(464)*
Age^	−.008(.01)		−1.1(474)
Total relationship quality			
Actor Effect	.011(.00)	.139	3.0(455)**
Partner Effect	.001(.00)	.007	.16(452)
Consensus			
Actor Effect	.016 (.01)	.125	2.7(448)**
Partner Effect	.003(.01)	.026	.58(444)
Satisfaction			
Actor Effect	.002(.01)	.009	.21(447)
Partner Effect	.003(.01)	.011	.26(447)
Affectional Expression			
Actor Effect	.054(.02)	.107	2.3(422)*
Partner Effect	.011(.02)	.021	.46(422)
Dyadic Cohesion			
Actor Effect	.025(.01)	.103	2.3(451)*
Partner Effect	−.009(.01)	−.037	−.83(450)

* $p < .05$

** $p < .01$

*** $p < .001$

^ Parameter estimates were calculated in model with total relationship satisfaction score