



# Reducing Intimate and Paying Partner Violence Against Women Who Exchange Sex in Mongolia: Results From a Randomized Clinical Trial

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## Abstract

Women who exchange sex for money or other goods, that is, female sex workers, are at increased risk of experiencing physical and sexual violence from both paying and intimate partners. Exposure to violence can be exacerbated by alcohol use and HIV/STI risk. The purpose of this study is to examine the efficacy of a HIV/STI risk reduction and enhanced HIV/STI risk reduction intervention at decreasing paying and intimate partner violence against Mongolian women who exchange sex and engage in harmful alcohol use. Women are recruited and randomized to either (a) four sessions of a relationship-based HIV/STI risk reduction intervention ( $n = 49$ ), (b) the same HIV/STI risk reduction intervention plus two additional motivational interviewing sessions ( $n = 58$ ), or (c) a four session control condition focused on

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wellness promotion ( $n = 59$ ). All the respondents complete assessments at baseline (preintervention) as well as at immediate posttest, 3 and 6 months postintervention. A multilevel logistic model finds that women who participated in the HIV/STI risk reduction group ( $OR = 0.14, p < .00$ ), HIV/STI risk reduction and motivational interview group ( $OR = 0.46, p = .02$ ), and wellness ( $OR = 0.20, p < .00$ ) group reduced their exposure to physical and sexual violence in the past 90 days. No significant differences in effects are observed between conditions. This study demonstrates the efficacy of a relationship-based HIV/STI risk reduction intervention, a relationship-based HIV/STI risk reduction intervention combined with motivational interviewing, and a wellness promotion intervention in reducing intimate and paying partner violence against women who exchange sex in Mongolia. The findings have significant implications for the impact of minimal intervention and the potential role of peer networks and social support in reducing women's experiences of violence in resource poor settings.

### **Keywords**

violence, sex work, intervention, clinical trial, Mongolia

Mongolia is a landlocked, sparsely populated country bordered by the Russian Federation to the north and the Republic of China to the south and east. Since 1990, Mongolia has endured devastating economic changes leading to more than 36% of the population living below the poverty line (Central Intelligence Agency, 2004) and resulting in severe increases in alcohol use, homelessness, street children, migratory workers, a deteriorating health and social services delivery system, and an increase in women engaging in survival sex work (National Aids Foundation [NAF], 2001, 2003; Purevdawa et al., 1997).

There are an estimated 4,000 commercial sex workers in Ulaanbaatar, the capital city of Mongolia (UNICEF, 2006). Although selling sex is not illegal in Mongolia, it is highly stigmatized, and a 1998 Debauchery Law makes it illegal to organize or facilitate prostitution. Many small hotels, massage parlors, salons, bars, and nightclubs, however, organize and provide sex services for their clients. Due to extremely harsh winters, location of sex work is seasonally dependent. During the winter months, sex work more often takes place indoors with the use of phone services or in local motels, bars, and nightclubs. An establishment's manager/owner may be the woman's intimate partner, such as a boyfriend, husband, or lover, or a former paying partner that controls her sex work and income, acting as a broker. Younger

women who exchange sex for money are more likely to use brokers, who provide some level of protection from client violence and police harassment but may also be abusive or coercive. In the warmer season, more women elect to conduct sex work outside, on the street, or migrate to places where many people gather for trading, working, traveling, and tourism. Both street and indoor-based sex work clients are a mainly mobile population, such as migrant workers, truck drivers, merchants, and tourists from other countries. Also, given the expansion of mining for natural resources in Mongolia, mining exploration sites have become common places for sex work. Few psychosocial, health, or economic support services exist in Mongolia to help women who exchange sex for money (Witte, Batsukh, & Chang, 2010).

Limited research has been conducted on intimate partner or sexual violence against women in Mongolia. A recent prevalence study of violence against women in the capital city of Ulaanbaatar found 52% of women reported experiencing some sort of violence in the past 6 months; 17.9% reported physical battery and 10% reported sexual abuse. Although these rates represent violence from all types of perpetrators, the majority (61.7%) were intimate partners. Women in Mongolia were more likely to report violence if they were 25 to 44 years of age, had a partner with an alcohol-related problem, were unemployed, or had lower household incomes (Oyunbileg, Sumberzul, Udval, Wang, & Janes, 2009). These rates of violence among women in Mongolia, though they account for violence with intimate partners and other perpetrators, are somewhat higher than other countries in the region (Ismayilova, 2009). In 2005, Mongolia enacted the Law Against Domestic Violence, aiming to protect survivors through programming and prevention activities. Despite progress that has been made in Mongolia on addressing violence against women, needs remain such as expanding service networks and interventions for survivors.

Women who exchange sex for money or goods, also known as female sex workers, are at an increased risk of experiencing violence and other negative health consequences. Wahab (2005) reported a 50% to 100% prevalence rate of violence in sex work. Among Mongolian sex workers in this study, 84% reported ever having experienced physical violence from paying partners, whereas 59% reported ever having experienced physical violence from intimate partners. Fifty-two percent of sex workers in this study reported ever having experienced sexual violence from their paying partners, whereas 22% reported ever having experienced sexual violence from an intimate partner (Parcesepe et al., in press). Violence against women who exchange sex is particularly common in contexts where there are few legal protections, causing them to have less control over their work environment, clients, or rates (Blankenship

& Koester, 2002; Rekart, 2006). Research shows that sex workers are at risk of violence from paying partners, managers, police, and intimate partners (Karandikar & Prospero, 2010; Nixon, Tutty, Downe, Gorkoff, & Ursel, 2002; Open Society, 2009; Rhodes, Simic, Baros, Platt, & Zikic, 2008). The types of violence used against women who exchange sex include harassment and abuse, physical assault, forced confinement, violence with a weapon, and rape. Health and mental health consequences of these actions range from mild to severe, including increased risk of contracting HIV/STIs, suicidal thoughts and attempts, and homicide (Decker et al., 2010; Potterat et al., 2004; Salfati, James, & Ferguson, 2008; Wang et al., 2007).

Violence, alcohol use, and HIV/STI risk are co-occurring problems for women who exchange sex and a recent article in the *Journal of the American Medical Association* called for multipronged interventions with female sex workers that address multiple health risks (Shannon & Csete, 2010). Studies examining the experience of sex workers across the globe highlight the complex relationship between violence and HIV/STI risk (Choi, Chen, & Jiang, 2008; Cote et al., 2004; El-Bassel, Witte, Wada, Gilbert, & Wallace, 2001; Shahmanesh et al., 2009; Surratt, Kurtz, Weaver, & Inciardi, 2005; Ulibarri et al., 2009; Wechsberg, Luseno, & Lam, 2005). Higher rates of violence are often linked to conflicts over condom negotiation, and violence against sex workers has been found to be associated with condom failure and client refusal to use condoms (Decker et al., 2010). Furthermore, coercive sex puts women at increased risk of contracting a sexually transmitted disease, as they have less control over the situation and safe sexual practices (Choi et al., 2008; Frye, 2001; Hagan & Dulmaa, 2007; Shahmanesh et al., 2009; Shannon et al., 2009). Data from the baseline assessment of the current study found that women who had any severe physical abuse from their paying partners in the past 90 days were 2.65 times more likely to have unprotected anal sex with paying partners in the past 90 days than the women who did not report severe physical abuse from paying partners (RRR = 2.65); women who had any sexual abuse from paying partners in the past 90 days were 2.54 times more likely to have unprotected anal sex with paying partners in the past 90 days than the women who did not report sexual abuse from paying partners (RRR = 2.54).

The relationship between violence and HIV/STI risk among women who exchange sex is further complicated by alcohol use. Alcohol use is prevalent across different cultures and contexts in which women exchange sex for money (Li, Li, & Stanton, 2010). Women may use alcohol as self-medication for experiences of trauma, to feel numb during commercial sexual encounters, or because they are forced to drink by clients (Li et al., 2010; Rodriguez

et al., 2010). Alcohol use, particularly binge drinking, has been shown to be highly correlated with HIV/STI risk and paying partner violence among sex workers (Chersich et al., 2007; Chiao, Morisky, Rosenberg, Ksobiech, & Malow, 2006; George & Stoner, 2000; Wang et al., 2007; Yadav et al., 2005; Zachariah et al., 2003). Among women who exchange sex in Mongolia, preliminary data found that more than 85% reported hazardous or harmful alcohol use, commonly prior to engaging in sex work. Furthermore, women who exchange sex in Mongolia reported being less likely to use a condom with a paying partner after using alcohol and that they would sacrifice condom use in order to avoid interpersonal violence (Witte, Batsukh, & Chang, 2010).

The purpose of this study was to examine the efficacy of a HIV/STI risk reduction, an enhanced HIV/STI risk reduction intervention, and a control condition at reducing recent intimate and paying partner violence against women with varying levels of harmful alcohol use and engaged in sex work in Mongolia. The current study took place as part of a parent study testing the efficacy of each intervention arm in reducing women's sexual risk and alcohol use. Women ( $n = 166$ ) were recruited and randomized to either (a) a relationship-based HIV sexual risk reduction intervention, (b) the same sexual risk reduction intervention plus motivational interviewing, or (c) a control condition focused on wellness promotion. At 3- and 6-month follow-up, both treatment interventions and the wellness promotion condition were effective in reducing the percentage and the number of unprotected acts of vaginal sex with paying partners in the past 90 days. All three conditions also demonstrated efficacy in reducing harmful alcohol use, and no significant differences in effects were observed between conditions. Although not originally targeted specifically to reduce violence, the HIV/STI risk reduction interventions incorporated elements to assist sex workers to reduce the potential for danger during sex work. Of interest in the current study was whether or not this content, taken together with the other elements of the intervention, would promote reductions in the experiences of violence among the women.

## Method

### *Participants*

This study was conducted between 2007 and 2009. Data for this sample were collected from women participating in services at the National AIDS Foundation (NAF) in Ulaanbaatar, Mongolia. Founded in 2000, NAF is the central distribution source for NGO education and training in HIV/STI risk reduction information. NAF also provides limited HIV/AIDS prevention

programming for high-risk groups, including sex workers. The main objective of NAF outreach is to inform sex workers about available programming: peer HIV and STI prevention education pamphlets and messages, condom distribution, safer sex discussion sessions, and referral to STI treatment or alcohol abuse treatment. Although the program provides accurate information and education promoting safer sex practices, it is not skills based. A total of 270 women were recruited and screened. Of those, 229 (85%) were considered eligible for the study. Women were eligible for the study if they (a) were at least 18 years of age; (b) were currently enrolled in the NAF program; (c) reported having engaged in vaginal or anal sexual intercourse in the 90 days prior to screening in exchange for money, alcohol, or other goods; (d) reported having engaged in unprotected vaginal or anal sexual intercourse in the 90 days prior to screening with a paying sexual partner; and (e) met criteria for harmful alcohol use in the past year (score of 8 or above on the Alcohol Use Disorders Identification Test [AUDIT]; Saunders, Aasland, Babor, DeLaFuente, & Grant, 1993). Participants would have been excluded if assessed to have a severe cognitive or psychiatric impairment that would interfere with their ability to provide informed consent or complete study instruments. No women were excluded for these reasons. All elements of the study protocol were reviewed and approved annually by the Institutional Review Boards at both the Columbia University and the National University of Mongolia in Ulaanbaatar.

## *Design*

All participants completed computer-based, interviewer-administered assessments, conducted in a private space in the study office at the NAF building. After completing the baseline assessment, women were invited to attend the next group initiation session (held within 2 to 4 weeks of the baseline assessment date). Since intervention groups were closed groups, if a woman missed the next group start date she was invited to the subsequent new group start date. The average time from baseline assessment to intervention start date was 14 days (range 1-45).

The study followed a cluster or group randomization schema, due to the inefficiency of attempting to recruit enough women at one time to randomize them individually to three conditions. Thus, randomization took place in clusters every 4 to 5 weeks or as soon as 10 to 12 eligible women were identified. A random number generator was used to randomly assign a new group of participants to (a) the *treatment condition* (HIV-SSR), 4-weekly relationship-based sessions on knowledge and skills related to HIV/STI risk

reduction; (b) the *enhanced treatment condition* (HIV-SSR+MI), the same 4-weekly sessions as in the treatment condition plus 2 wrap-around sessions engaging motivational interviewing; or (c) the *wellness promotion control condition* (WP-C), 4-weekly sessions on overall health and wellness knowledge and skills. The generator sought to balance group assignments evenly across a total estimated number of groups needed to provide treatment to all participants. Based on an intent-to-treat model, all women who were randomized ( $n = 166$ ) were asked to return for follow-up assessments at 2 weeks following the completion of the intervention group (considered immediate posttest) and then again at 3 and 6 months after their final intervention session. Assessment staff were blinded to participant intervention assignment. A complete consort table may be accessed in the parent study (Witte et al., 2011). Recruitment took place between March 2008 and January 2009, and follow-up assessment was conducted between April 2008 and October of 2009.

## Assessment

The assessment interview was designed to elicit self-reported data. Measures were translated into Mongolian from English and then back-translated for accuracy. The baseline assessment was then pilot-tested with seven NAF and research project staff and determined to have adequate face validity. Trained interviewers administered the tool, which included sociodemographic characteristics, HIV/STD risk behaviors, and alcohol use variables.

*Sociodemographics.* Sociodemographic variables included age, race and ethnicity, education, employment status, income, marital status, having an intimate partner (a nonpaying partner, including a husband, boyfriend, or lover), current housing situation, and whether exchanging sex for money was the primary source of income.

*Intimate and paying partner violence.* Intimate and paying partner violence was measured using the Revised Conflict Tactics Scale (CTS2), which measures the extent to which individuals perpetrate sexual, injurious, and physical attacks on one another, as well as psychological aggression and negotiating behaviors. To examine intimate partner violence as well as violence related to sex work, we used an adaptation of the CTS2 assessing “lifetime” and “past 90 days” violence at the hands of any intimate or paying partners (Straus, Hamby, Boney-McCoy, & Sugarman, 1996).

The study included three conditions: a HIV/STI risk reduction intervention (HIV-SRR); an enhanced HIV/STI risk reduction intervention based on the original sessions, but adding two sessions of motivational interviewing (HIV-SRR+MI); and a wellness control condition (WC). The HIV/STI risk reduction

intervention was adapted from Project Connect (El-Bassel et al., 2003) and was based on social cognitive theory and a relationship-oriented ecological perspective. Understanding that risk behaviors occur in a dyadic context, and consistent with the conceptual framework of the original research, the intervention sessions are relationship based, meaning that the unit of attention was the woman and her paying sexual partner.

The HIV-SSR and HIV-SSR+MI intervention groups included specific exercises on how to protect oneself from violence with a paying partner. For example, the women in these two study groups were shown a video depicting specific ways to protect oneself from violence, such as telling a friend where you are going with a client, avoiding completely private spaces, not getting into a car with a client, and, especially, not getting into a car with more than one client. The intervention was not originally intended to directly address intimate partner violence. Further details on the intervention can be found in the parent study (Witte et al., 2011).

Adaptations specific to Mongolian culture and language were made following several focus groups with sex workers to identify potential issues related to both the content and implementation feasibility of sessions. During the adaptation process, women made several recommendations that we incorporated into the final intervention, including the need for more content related to reducing the likelihood of exposure to violence at the hands of paying partners. A videotape and discussion of ways to reduce exposure to violence were added to the Risk Reduction (HIV-SSR) and Risk Reduction Plus Motivational Intervention (HIV-SSR+MI) sessions. Finally, women indicated a preference for having female facilitators, due to the sensitive nature of the content. Intervention sessions were, therefore, conducted only with women in groups of six to eight women per group. All intervention sessions were delivered in Mongol by female facilitators and met weekly for 90 min.

### *Quality Assurance*

All research staff completed a standardized training, used structured intervention and assessment protocols, met on a weekly basis with clinical and task supervisors, and received routine monitoring and supervisory feedback. To ensure fidelity of the assessment and intervention delivery, all assessments and intervention sessions were audiotaped and a random sample of approximately 10% for each interviewer and facilitator was reviewed by research staff. A competency criterion of 80% accuracy was required. Intervention quality assurance reviews focused on a checklist of whether the key elements of each session was addressed, the time spent delivering each



element, how well the element was addressed, and unusual events that may have occurred during each session. Fidelity of intervention checks identified deviation of either content or time (competency criterion operationalized as adherence to 80% of activities and time frames). In up to 15% of the reviews, the most common error made by session facilitators (identified by quality assurance reviewers) was exceeding the session time limit and either missing the last one or two exercises or extending the session for an additional 15 to 30 min.

The study design included a Data Safety and Monitoring Plan (DSMP) that guided the protections of study participants and data safety. The principal investigator and two coinvestigators, one in Mongolia and one in the United States, held primary responsibility for complying with the reporting requirements of the institutional and local IRBs as well as the funding agency.

### *Data Analysis*

Due to the small sample of women with an intimate partner, we created two variables that combined incidences of physical violence and incidences of sexual violence from both types of partner. At each time point (baseline, 3 month, and 6 month postintervention) each type of violence (physical and sexual) was coded 1 if the respondent reported that it had happened in the past 90 days and 0 if it did not. The combined “physical or sexual violence” outcome was coded 1 if the respondent reported that at least one type of violence occurred in the previous 90 days. Immediate posttest (IPT) data were excluded from the analysis because they were collected at 2 months postintervention, which overlaps with the intervention implementation period.

A multilevel logistic model with an individual-level random effect was fitted for the baseline, Month 3, and Month 6 data sets. Using an intent-to-treat approach, all women randomized were included for each data point, and the multilevel model specifies the distribution for the missing values. The model is fitted in WinBUGS (a Gibbs Sampling software for Bayesian modeling). Month 3 and Month 6 data sets were pooled together as the after-intervention dataset. Separate coefficients for Month 3 and Month 6 data were also fitted, which shows that these two data sets do not have significantly different coefficient estimates, so these results were omitted from this report. Different explanatory variables, including age, education level, duration of sex work, income, and marital status, were included in the model however, since none of them has significant influence on other coefficient estimates, the results will also not be presented here. Treatment dummies for the three randomly assigned groups are added to test the difference between treatment group and control group after intervention, and the

after-intervention dummy variable is added to test the overall improvement over time.

## Results

In Table 1 we show the descriptive statistics for women in the study sample by treatment condition. The majority of women in each treatment condition were aged above 25 years. Education level was relatively high across all treatment groups, with 83% to 93% having completed secondary school. The percentage of women who made less than or equal to 100,000 Togrogs (about US\$80) per month ranged from 38% to 53%. About 39% to 51% of the participants reported that they currently had an intimate partner. The mean number of years in sex work ranged from 4.4 to 6.7. This range in the mean number of years in sex work was the only sociodemographic characteristic that varied significantly by treatment condition and was controlled for in the logistics model. The reported mean number of paying partners on most recent working day was 2.6 to 3.0. Women in each of the three conditions reported high rates of harmful alcohol use, with AUDIT scores ranging from 28.4 to 32.6.

Sexual and physical violence occurred in the context of both paying and intimate partner relationships. In general, sexual and physical violence occurred more frequently with paying partners (See Table 2). At baseline, the recent incidence of physical violence from a paying partner was 0.62, 0.56, and 0.50 for the wellness, treatment, and enhanced treatment groups, respectively. Incidence of sexual violence by a paying partner among participants at baseline was 0.36, 0.38, and 0.26 in the past 90 days. Frequency of physical and sexual violence from intimate partners at baseline was lower than that of paying partners. The recent incidence of physical violence from an intimate partner at baseline was 0.40, 0.38, and 0.52, for the wellness, treatment, and enhanced treatment groups. At baseline, sexual violence with intimate partners occurred at the lowest frequency, with a mean proportion of 0.12, 0.13, and 0.16 for the wellness, treatment, and enhanced treatment groups.

At 6-month follow-up, participants' recent experiences of physical or sexual violence from an intimate or paying partner decreased from baseline. The average incidence of physical violence from a paying partner at 6-month follow-up was 0.34, 0.18, and 0.26, for the wellness, treatment, and enhanced treatment conditions. The incidence of sexual violence from paying partners within the past 90 days at 6-month follow-up was 0.08, 0.03, and 0.21. The proportion of participants who experienced violence from an intimate partner at 6-month follow-up was also less than at baseline. The incidence of physical

**Table 1.** Sociodemographic and Risk Behavior Characteristics at Baseline

	Wellness (n = 59)	Risk reduction (n = 49)	Risk reduction and motivational interviewing (n = 58)	Non randomized (n = 56)
<b>Sociodemographic characteristics</b>				
Aged <25 years, %	10.2	14.3	12.1	14.3
≥ Secondary school, %	93.2	87.8	82.8	87.5
Monthly income ≤ 100,000 Togrogs <sup>a</sup> , %	52.5	44.9	37.9	50.0
Divorced, widowed, or separated, %	57.6	55.1	67.2	57.1
Has intimate partner, %	44.1	51.0	43.1	39.3
Duration of sex work (year), mean	4.4 <sup>b*</sup>	6.7 <sup>b*</sup>	6.6 <sup>b*</sup>	5.2 <sup>b*</sup>
<b>Risk behavior characteristics</b>				
Number of paying partners during most recent working day, mean	2.9	2.6	3.0	2.6
HIV positive, %	0.0	2.0	1.7	0.0
No. of unprotected vaginal sexual acts with paying partner in past 90 days, mean	32.1 <sup>c</sup>	26.6 <sup>c</sup>	34.1 <sup>c</sup>	25.0 <sup>c</sup>
Audit scores at assessment <sup>d</sup>	30.9	28.4	32.6	—

<sup>a</sup>Significant difference between conditions at the  $p \leq .05$  level, with *t* test.

<sup>b</sup>One US dollar is approximately 1,250 Togrogs; 100,000 Togrogs is approximately US\$80.

<sup>c</sup>Sample sizes are 57, 45, 56, and 53 for wellness, risk reduction, risk reduction and motivational interviewing, and nonrandomized, respectively.

<sup>d</sup>Sample sizes are 44, 34, 50, and 54 for wellness, risk reduction, and risk reduction and motivational interviewing, respectively.

<sup>e</sup>Audit scores not available for nonrandomized.

violence from an intimate partner at 6-month follow-up was 0.15, 0.17, and 0.26 during the past 90 days for the wellness, treatment, and enhanced treatment groups, respectively. No participant reported experiencing recent sexual violence from an intimate partner at the 6-month follow-up for the wellness or HIV/STI risk reduction treatment groups. The incidence of sexual violence

**Table 2.** Proportion of Female Sex Workers Who Experienced Physical and Sexual Violence From Intimate and Paying Partners in the Last 90 days, by Treatment Condition (SE)

	Intimate Partner			Paying partner		
	Any physical violence in last 90 days					
	Wellness control	HIV/STI risk reduction	HIV/STI risk reduction + motivational interviewing	Wellness control	HIV/STI risk reduction	HIV/STI risk reduction + motivational interviewing
Baseline	0.4 (0.07) <i>n</i> = 25	0.38 (0.07) <i>n</i> = 24	0.52 (0.07) <i>n</i> = 25	0.62 (0.06) <i>n</i> = 59	0.56 (0.07) <i>n</i> = 49	0.50 (0.07) <i>n</i> = 58
3 months	0.13 (0.05) <i>n</i> = 23	0.29 (0.08) <i>n</i> = 17	0.20 (0.06) <i>n</i> = 24	0.10 (0.05) <i>n</i> = 42	0.21 (0.07) <i>n</i> = 34	0.35 (0.07) <i>n</i> = 46
6 months	0.15 (0.05) <i>n</i> = 33	0.17 (0.07) <i>n</i> = 23	0.26 (0.06) <i>n</i> = 31	0.34 (0.07) <i>n</i> = 50	0.18 (0.07) <i>n</i> = 33	0.26 (0.06) <i>n</i> = 47
	Any sexual violence in the last 90 days					
Baseline	0.12 (0.04) <i>n</i> = 25	0.13 (.05) <i>n</i> = 24	0.16 (0.05) <i>n</i> = 25	0.36 (0.06) <i>n</i> = 58	0.38 (0.07) <i>n</i> = 48	0.26 (0.06) <i>n</i> = 58
3 months	0.09 (0.04) <i>n</i> = 23	0.00 (0.00) <i>n</i> = 17	0.00 (0.00) <i>n</i> = 24	0.07 (0.04) <i>n</i> = 42	0.18 (0.07) <i>n</i> = 34	0.12 (0.05) <i>n</i> = 46
6 months	0.00 (0.00) <i>n</i> = 33	0.00 (0.00) <i>n</i> = 23	0.10 (0.04) <i>n</i> = 31	0.08 (0.04) <i>n</i> = 50	0.03 (0.03) <i>n</i> = 33	0.21 (0.06) <i>n</i> = 47

\**p* < .05. \*\**p* < .01.

from an intimate partner during the past 90 days for the enhanced treatment group follow-up was 0.10.

In Table 3 we provide the estimated odds ratios modeling the probabilities of physical violence, sexual violence, and physical or sexual violence from multilevel logistic models as described in the previous section. In modeling physical violence, the estimated odds ratios for the interaction terms of wellness group, HIV-SRR group, and HIV-SRR+MI group dummy variables and postintervention dummy variable (OR = 0.15, 0.11, 0.29) are significantly smaller than the estimated odds ratio for the baseline dummy variable (OR = 1.46). This result shows that for those three groups, the probabilities of having physical violence in the past 90 days are significantly smaller than that of baseline. For both models of sexual violence and physical or sexual violence, we also found the similar results, where we gained significant violence reduction after intervention. In each model we controlled for relevant covariates, including total monthly income and the number of paying partners.

## Discussion

This study reports the outcomes on intimate partner violence from the first behavioral clinical trial of an HIV/STI prevention intervention in Mongolia. Study findings demonstrate reductions in intimate and paying partner violence against women who exchange sex in Mongolia, across study conditions. These reductions are statistically significant over time for each group, although the reduction differences we expected to see between groups are not significant. These findings suggest that even low-impact interventions, such as a wellness condition, can achieve reductions in violence experienced by women who exchange sex for money in a low-resourced setting. Furthermore, the findings indicate that low-impact interventions conducted in peer group settings may address co-occurring issues related to HIV risk reduction, including intimate partner violence. With few social or supportive services, and among such a stigmatized and underserved population, we observed that minimal intervention served to greatly enhance women's protection from violence. Of importance to note is that the positive outcomes of this study contrast other individual-level HIV prevention interventions that had the unintended outcome of increasing exposure to violence among sex workers (Shannon et al., 2009).

Findings from the current study suggest that women who exchange sex in Mongolia are at increased risk of experiencing violence than women from the general population. Prior to participating in the intervention, 50% to 75% of women in the current study reported experiencing physical violence from a

**Table 3.** Estimated Odds Ratios in IPV Regression With Random Effects (SE; 95% confidence interval)

	Physical violence	Sexual violence	Physical or sexual violence
Baseline dummy	1.46 (0.35; 0.91-2.34)	0.40** (0.09; 0.26-0.63)	1.75* (0.42; 1.09-2.80)
Wellness Group Dummy x After-Intervention Dummy	0.15** (0.06; 0.068-0.35)	0.05** (0.03; 0.016-0.14)	0.20** (0.08; 0.096-0.43)
Risk Reduction Group Dummy x After-Intervention Dummy	0.11** (0.06; 0.038-0.34)	0.06** (0.04; 0.018-0.19)	0.14** (0.06; 0.03-0.61)
Risk Reduction and Motivational Interview Group Dummy x After-Intervention Dummy	0.29** (0.12; 0.13-0.65)	0.15** (0.06; 0.071-0.33)	0.46* (0.15; 0.24-0.88)

\* $p < .05$ . \*\* $p < .01$ .

paying partner and 26% to 36% experienced sexual violence from a paying partner in the past 3 months. These rates are more than double the violence rates for women in Mongolia, of whom about 18% experienced physical violence and 10% experienced sexual violence in the past 6 months (Oyunbileg et al., 2009). Our findings also indicate that women who exchange sex are also more likely to experience physical (38%-52%) and sexual violence (12%-16%) from an intimate partner as compared to other women in Mongolia. Given the high prevalence of violence against women in Mongolia, particularly against those who exchange sex, the positive results of the current trial and potential mediators should be considered further.

One of the common elements of each intervention arm was the peer group format of treatment sessions. The peer network has shown to be an important source of emotional support and physical survival for women who exchange sex (Campbell, 2000; Rodriguez et al., 2010). Since the exchange of sex for money is highly stigmatized in Mongolia, sex workers do not trust law enforcement to seek safety or justice. In addition, women exchanging sex feel isolated and too ashamed to tell others about their work (Witte et al., 2010). Therefore, individual safety from violence is left in the hands of women who exchange sex and their clients. Hence, we speculate that the group format of each treatment arm may have strengthened the women's peer networks, increasing their protection and safety around their commercial sexual activity and at other times. In addition, peer networks may have connected the women with other community resources (Rodriguez et al., 2010) that can help in preventing violence.

In addition to reductions in violence, women from all three intervention groups reported a decrease in harmful alcohol use and the proportion of unprotected sexual acts (Witte et al., 2011). These findings reinforce evidence that women who are able to reduce alcohol use may be better able to detect, avoid, or diffuse potentially violent situations with paying partners (Li et al., 2010). By reducing alcohol use and avoiding violent situations, women may have been better able to protect themselves from HIV/STI risk. Katsulis and colleagues (2010) propose that sex workers are constantly negotiating a hierarchy of risk between economic insecurities, substance abuse, sexually transmitted disease, and violence. Our findings suggest that when women are able to better avoid HIV/STI risk and reduce alcohol use, they also improve their ability to mitigate violence.

Findings need to be interpreted in light of study limitations. The study had a relatively small sample, data were by self-report, and the follow-up period was short term. The 90-day recall period for violent experiences, though typical for IPV and HIV/STI research, may have challenged the accuracy of participant response.

Finally, the study only considered violence from paying and intimate partners, not from other possible perpetrators such as pimps or law enforcement officials. Although we were not able to separately analyze violence from paying and intimate partners, research with women who exchange sex in Mongolia and elsewhere suggests the relationship distinction between different types of partners may be ambiguous or fluid (Karandikar & Prospero, 2010; Witte et al., 2010).

The practice implications from this study suggest the potential benefit of minimal interventions with women who exchange sex in low-resourced contexts. Both peer networks and limited support from professionals may have the ability to reduce women's exposure to violence, particularly in contexts where exchanging sex is highly stigmatized. Furthermore, findings from this study support the call for multipronged public health interventions with women who exchange sex (Shannon & Csete, 2010). Specifically, practice and research interventions with women who are alcohol dependent should consider including harmful alcohol use and HIV/STI risk reduction in efforts to reduce experiences of violence from paying and intimate partners.

Estimates suggest that more than 80% of women who engage in sex work in Mongolia do so because of unemployment or poverty ("Report: Sex Workers Becoming Younger, Worse Off," January 15, 2009). In accordance with a harm reduction approach, the intervention sought to teach women skills to better mitigate potential health risks while engaging in sex work for economic survival. Still, the economic realities facing women in Mongolia must be considered in future practice and research. During debriefing focus groups many women from the current study indicated interest in learning financial literacy and business skills. Future research by the team will incorporate these recommendations in the development of interventions that seek to decrease women's risk and increase their economic opportunities.

In addition to focusing on economic strategies that would enable women to reduce their sexual risk related to survival sex work, future research should consider (a) the differing prevalence and impact of intimate versus paying partner violence, (b) the role of peer networks and social support in interventions to reduce violence against sex workers, and (c) how understanding more clearly the causal or mediational relationships between violence, alcohol use, and HIV/STI risk will lead to more efficacious interventions to address these comorbid issues among women who exchange sex in Mongolia.

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