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Experiences and Acceptance of Intimate Partner Violence: Associations with STI Symptoms and Ability to Negotiate Sexual Safety among Young Liberian Women

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Abstract

Women who experience intimate partner violence may be at elevated risk for poor sexual health outcomes including sexual transmitted infections (STIs). This association however, has not been consistently demonstrated in low-income or post-conflict countries; furthermore, the role that attitudes towards intimate partner violence play in sexual health outcomes and behaviour has rarely been examined. We examined associations between intimate partner violence experiences, accepting attitudes towards physical intimate partner violence, and sexual health and behavioural outcomes among 592 young women in post-conflict Liberia. Participants' experiences with either moderate or severe physical violence or sexual violence were common. Additionally, accepting attitudes towards physical intimate partner violence were positively associated with reporting STI symptoms, intimate partner violence experiences and the ability to negotiate safe sex. Findings suggest that for sexual health promotion and risk reduction intervention efforts to achieve full impact, interventions must address the contextual influence of violence, including individual attitudes toward intimate partner violence.

Keywords

Intimate partner violence; STIs; sexual safety; women; Liberia

Introduction

An estimated 1 in 5 women have experienced physical and/or sexual violence by an intimate partner at some point in their lives, making it one of the leading causes of morbidity and mortality among women (Kishor and Johnson 2004; United States Agency for International Development 2009). Women who have experienced intimate partner violence are at risk for experiencing poor sexual health outcomes, including unwanted and early pregnancy, induced abortions, sexually transmitted infections (STIs), and in some cases infertility (Bauer et al. 2002; Cavanaugh et al. 2010; Miller et al. 2010; Silverman et al. 2007; Silverman Raj and Clements 2004).

Several studies have also shown intimate partner violence among women to be associated with behavioural outcomes such as having sex with 'high-risk' male partners (men living with HIV, who inject drugs, or who are non-monogamous), having multiple partners in the

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past year, and trading sex for money, drugs, housing, and/or other support (Cavanaugh et al. 2010; El Bassel et al. 2007; Raj Silverman and Amaro 2004; Wu et al. 2003; Zhan et al. 2012). IPV is hypothesized to increase women's risk of poor sexual health outcomes through coercive or forced sexual activity and through instilling fear of violence. These circumstances reduce women's ability to engage in safe sexual practices such as ability to refuse sex and ability to negotiate condom use (Ellsberg et al. 2008; Maman et al. 2000; Maman et al. 2010; Wingood and DiClemente 2000).

Despite the growing body of literature highlighting the link between intimate partner violence and sexual health outcomes, however, few studies have examined the association between women's experiences and attitudes towards intimate partner violence, and sexual health and behaviour outcomes in low-income post-conflict settings. In this study, we fill this gap by examining whether intimate partner violence experiences and women's accepting attitudes towards this violence are associated with STI symptoms, and ability to negotiate safe sex practices among women in a low-income post-conflict Liberia. Findings from Liberia can potentially inform sexual health promotion and risk reduction interventions among young women not only in Liberia but also in other low-resource and post-conflict settings.

Association between Intimate Partner Violence and Sexual Health Outcomes

Although IPV has been associated with sexual risk behaviour in high-income countries such as the United States (El Bassel et al. 2007; Raj et al. 2004) findings from studies in middle and low income countries have been inconsistent. For example, in countries such as Chile, Rwanda, South Africa, and Tanzania intimate partner violence has been associated with HIV status and STI risk behaviours and, including multiple partners, inconsistent condom use, trading sex for money, and sex with partners whose serological status is unknown (Behrendt 2008; Jewkes et al. 2006; Maman et al. 2000). On the other hand, a recent study using data from 10 low-income countries, found no consistent association between intimate partner violence and HIV serostatus (Harling Msisha and Subramanian 2010). For example, women from India who experienced any combination of either physical or sexual intimate partner violence were at increased risk for HIV compared to those women who did not experience intimate partner violence. On other hand, women from Haiti who reported experiencing any combination of either physical or sexual intimate partner violence were shown to be at lower risk for HIV infection. No significant associations between intimate partner violence and HIV were demonstrated among the other 10 countries in the study. This multi-country, however, study only examined HIV serostatus. While knowing HIV status is critical, symptoms of STIs can be equally detrimental to sexual health and lead to increase risk of infertility and susceptibility to HIV.

To date few studies have investigated the extent to which attitudes about intimate partner violence impact the association between intimate partner violence and sexual health outcomes within post-conflict settings (Bazargan-Hejazi et al. 2012). Rather, most studies have focused on the association between women's attitudes towards intimate partner violence, exposure to intimate partner violence, or physical and psychological health consequences of intimate partner violence, and neglect to investigate whether attitudes towards intimate partner violence are associated with sexual health outcomes such as STI symptoms (Deribe et al. 2012; Guruge et al. 2012; Uthman Moradi and Lawoko 2011). While one systematic review (Coker 2007) demonstrated that intimate partner violence adversely affected sexual health outcomes, the generalizability of these results are limited because the majority of studies in the review were conducted in developed countries; furthermore, none of studies were from were conducted in post-conflict settings. Examining the link between intimate partner violence and sexual health in post conflict settings is critical. In many post-conflict settings, gender-based violence and intimate partner violence

may be normative (Allen and Devitt 2012), and women may have few legal, social or economic protections from intimate partner violence. Further, sexual health outcomes such as STI symptoms have serious health implications, including sexual dysfunction, menstrual irregularity, and vaginal bleeding, all of which are exacerbated in low-resources settings where access to adequate care is lacking. Elucidating these associations in post-conflict Liberia may be useful in identifying intervention targets to change attitudes that perpetuate intimate partner violence and improve sexual health and behavioural outcomes.

Liberian Context: Understanding the socio-cultural influence of war

The West African nation of Liberia has been devastated by 14 years of some of the most violent warfare in African history. Over 250,000 people (7% of Liberia's population) were killed, and more than a third of the population was displaced. These events included widespread violence against women and perpetuated tolerant attitudes towards violence, both of which still persist within the culture (Busza and Lush 1999; Wiltz 2010). Following the war, the once vibrant Liberia is now one of the poorest countries in sub-Saharan Africa (United Nations Human Development Programme 2011) suffering from extreme poverty, low-levels of education, limited sources of income, and limited access to basic resources including clean water, sanitation, electricity, and trained physicians. Violence continues to be an ongoing problem.

A recent epidemiological study estimated that 10% of Liberian women indicated their first sexual experience was forced, and 37% of women between ages 15–24 reported experiencing some form of sexual violence (Liberia Institute of Statistics and Geo-Information Services (LISGIS) 2008b). Chronic exposure to sexual violence and lack of resources has led to transactional sex, with 30% of young women in a recent survey reporting trading sex for money, food, and shelter (Behrendt 2008). Conditions of poverty and political unrest additionally compromise women's power within relationships and likely translate into reduced ability to engage in safe sexual practices (e.g., the ability to refuse sex and to negotiate condom use) (Kennedy et al. 2004; Kennedy et al. 2011) and increased acceptance of physical violence against women. Although work toward reducing sexual and gender-based violence in Liberia is underway, strategic planning tends to emphasise rape and sexual abuse of young children and girls and neglects to address the more widespread issue of intimate partner violence that is likely adversely affecting sexual health outcomes among Liberian women.

Given Liberia's long history of violence, political unrest, limited resources, elevated rates of intimate partner violence, and high rates of STI symptoms among women (36%) (Liberia Institute of Statistics and Geo-Information Services, 2008b). Liberia is an important setting in which to examine the relationship between intimate partner violence and sexual health. Furthermore, this association may be particularly critical to understand among young Liberian women (ages 15 to 24) as they are more likely than other age groups to report STI symptoms and to experience intimate partner violence (LISGIS 2008b). Thus, this study examined the relationship between intimate partner violence experiences and attitudes towards intimate partner violence with STI symptoms and ability to negotiate safe sex practices among young women in post-conflict Liberia. We aimed to: (1) describe the prevalence of intimate partner violence experiences, accepting attitudes towards physical intimate partner violence, and ability to negotiate safe sex among young Liberian women, (2) examine the associations between intimate partner violence experiences, attitudes toward intimate partner violence, and ability to negotiate safe sex, (3) determine the associations between intimate partner violence experiences, attitudes towards intimate partner violence, ability to negotiate safe sex, and STI symptoms and (4) determine if associations of intimate partner violence experiences, attitudes towards physical intimate partner violence and STI

symptoms are moderated by ability to negotiate safe sex among young women living in Liberia.

Methods

Study Design and Sample

We conducted a cross-sectional analysis of data from the 2007 Liberia Demographic and Health Survey (LISGIS 2008a). This nationally representative survey used a two-stage cluster sampling design. First, 298 sample clusters, stratified by urban and rural areas, were selected from a list of enumeration areas from the 1984 Population Census, which was the most recent census and only sampling frame available at the time the Liberia Demographic and Health Survey sample was designed. Because the 1984 census frame was outdated, however, the sample design used 2005 projected population estimates and updated the selected enumeration areas to ensure the quality of survey data. Clusters were selected with probabilities proportional to the size of the sampling frame in each stratum and included 114 urban and 184 rural clusters. Twenty-five households were then selected from each cluster and represented either an enumeration area or segment of an enumeration area where the area was too large to list all households in the area. All women between the ages of 15 and 49 who spent the night before the survey in the household were eligible to participate. (A full description of study design is located at the Measure DHS website <http://www.measuredhs.com>).

Based on our specific aims, we limited our analytic sample to non-pregnant young women aged 15 through 24 ($N = 2,416$) who were currently married or cohabitating ($N=793$), because most of our measures of interest were collected only among these women. Finally, as we desired to examine safe sex practices among women, we also limited the sample to women who reported they did not desire to have children within the next two years ($N=592$), as women trying to get pregnant are less likely to engage in safe sex practices.

Measures

Predictors

Intimate Partner Violence Experiences: Intimate partner violence experiences were assessed using nine items from the Conflict Tactics Scale (Straus 1990). Participants were asked whether (yes) or not (no) they had experienced each act in the past 12 months. Physical violence items were divided into *moderate* violence and *severe* violence based on severity levels—likelihood of the behaviour to cause physical injury—which are commonly used categorisations (Straus 2007). Participants were seen as having experienced *moderate* violence, if they indicated that their partner/husband had ever pushed, slapped, twisted their hair/arm, or punched them; *severe* violence, if they indicated that their partner/husband had ever kicked, choked or threatened or attacked them with a weapon. *Sexual* violence items were based on forced or coerced sexual behaviour (LISGIS 2008a). Participants were seen as having experienced *sexual* violence, if they indicated that their partner/husband had ever physically forced or coerced them to engage in sexual activity when they did not want to.

Attitudes towards Physical Intimate Partner Violence: Attitudes towards physical intimate partner violence were assessed using five items “Wife beating is justified if she: (1) goes out without telling him; (2) neglects the children, (3) argues with him, (4) refuses to have sex, and (5) burns food.” Participant indicated whether or not they agreed with the statements. For bivariate and multivariate analyses, these items were tallied to derive a total score, ranging from 0 to 5, with higher scores indicating more accepting attitudes towards physical intimate partner violence. Internal consistency for this scale was acceptable (Cronbach’s $\alpha = 0.77$).

Ability to negotiate safe sex: Ability to refuse sex and ability to negotiate condom use were assessed using one item each. Women responded to “Can you say no to your partner/husband if you do not want to do man business (i.e., sexual activity)?” with “yes,” “no,” or “don’t know.” Women similarly responded to “Can you ask your partner/husband to use a condom if you wanted him to?” with “yes,” “no,” or “don’t know.” For analyses, responses were dichotomized into “yes” versus “no” or “don’t know”.

Outcome

STI Symptoms: STI symptoms were assessed with 3 items: (1) “In the past 12 months, have you had a disease which you got through sexual contact?”; (2) “In the past 12 months, have you had a genital sore near your vagina?” and (3) “In the past 12 months, have you had a genital discharge?” Participants who responded “yes” to any of the three items were considered to have had STI symptoms within the past 12 months.

Sociodemographic controls—We also used common sociodemographic characteristics as control variables, including age, education level (no education, primary, secondary or higher), whether or not the respondent was currently working, marital status (married or living together), and total number of children ever born. Additionally, we used region and area (urban or rural) to describe the location of participants’ residence and the wealth index, divided into quintiles, which was compiled by the DHS using a combination of reported household assets, services, and amenities (LISGIS 2008a).

Data Analysis—We began our analysis by generating means and frequencies to describe the sample and the prevalence of intimate partner violence experiences, attitudes towards physical intimate partner violence, and ability to negotiate safe sex. We then used linear regression to determine the unadjusted and adjusted associations between intimate partner violence experiences, attitudes towards physical intimate partner violence, and ability to negotiate safe sex. Similarly, we used logistic regression models to explore the unadjusted and adjusted associations between intimate partner violence experiences, attitudes towards physical intimate partner violence, ability to negotiate safe sex, and STI symptoms. Adjusted models controlled for all socio-demographic variables. Last, we tested whether the association between intimate partner violence experiences and STI symptoms was moderated by ability to negotiate safe sex and whether the association between accepting attitudes towards physical intimate partner violence and STI symptoms was moderated by ability to negotiate safe sex by including corresponding interaction terms one by one in our final model.

All analyses were weighted and accounted for the complex sampling design and were completed with SAS 9.2 (Carey, NC). A complete case analysis was used because the proportion with missing data was low (< 5%).

Results

Sample Characteristics

Participants on average were 21 years old. Approximately 41% lived in the North Central region, 24% lived in the capital city of Monrovia, and the remaining 35% lived in the other four regions of the country. Sixty-five percent of the sample resided in a rural region of the country and 35% resided in an urban region. Thirty-two percent of the sample reported receiving no formal education, 49% attended primary school, and 19% reported attending secondary school or higher (Table 1). Forty-five percent reported being married, while the remaining 55% of the sample reported living with a partner. Half of the sample population was employed. On average women reported having had two children.

Prevalence of Intimate Partner Violence Experiences, Attitudes towards Physical Intimate Partner Violence, and Ability to Negotiate Safe Sex

A total of 41% of women indicated they had been the victim of *moderate* violence (having been pushed, slapped, having had her arm twisted or hair pulled, or punched), 20% indicated that had been the victim of *severe* violence (having been kicked, choked, or threatened or attacked with a weapon), and 11% indicated that had been the victim of sexual violence (being physically forced to have sex or being forced to do any sexual acts she did not want to) by their current or most recent partner (Table 2). Half of all young women indicated that it was justifiable for a man to use physical violence if his wife went out without telling him (49%), neglected the children (51%), or argued with him (54%). Approximately 27% reported that it was justifiable for a man to use physical violence against his wife if she refused to have sex with him, and 17% said it was justifiable if she burnt food when cooking a meal. A total of 74% of women reported the ability to refuse sex, but less than half (47%) reported the ability to negotiate condom use.

Associations between Intimate Partner Violence Experiences, Attitudes towards of Physical Intimate Partner Violence, and Ability to Negotiate Safe Sex

In unadjusted analyses (Table 3), women who were victims of *moderate* violence did not have significantly different attitudes toward physical intimate partner violence compared with women who were not victims of *moderate* violence ($M = 2.1$, $SD = 0.12$ vs. $M = 1.9$, $SD = 0.10$; respectively; $p > 0.05$). Women who were victims of *severe* violence, however, had significantly greater acceptance of physical intimate partner violence ($M = 2.4$, $SD = 0.16$) compared with women who were not victims of *severe* violence ($M = 1.9$, $SD = 0.08$; $p < 0.01$). Women who were victims of sexual violence also had significantly greater acceptance of physical intimate partner violence ($M = 2.5$, $SD = 0.21$) compared with women who were not victims of sexual violence ($M = 1.9$, $SD = 0.10$; $p < 0.01$). Additionally, women who believed they had the ability to refuse sex indicated physical intimate partner violence was acceptable in fewer circumstances than women who did not believe they had the ability to refuse sex ($M = 1.9$, $SD = 0.07$ vs. $M = 2.2$, $SD = 0.20$; respectively; $p < 0.01$); however, acceptance of physical intimate partner violence was not significantly related to ability to negotiate condom use. Acceptance of physical intimate partner violence was not significantly different for women who believed they had the ability to negotiate condom use and women who did not believe they had the ability to negotiate condom use ($M = 2.0$, $SD = 0.10$ vs. $M = 1.9$, $SD = 0.10$; respectively; $p > 0.05$).

In our linear regression models adjusted for participant characteristics (age, education, employment status, marital status, urban residential location, region, wealth, and number of children ever born), women who had ever experienced *severe* physical violence and women who had ever experienced *sexual* violence had greater acceptance of physical intimate partner violence. Additionally, having the ability to negotiate condom use was associated with greater acceptance of physical intimate partner violence.

Associations between STIs and Intimate Partner Violence experiences, attitudes toward physical Intimate Partner Violence, and ability to negotiate safe sex

Unadjusted regression models indicated that women who had experienced any *severe* violence and women who had the ability to negotiate condom use had significantly greater odds of having had STI symptoms in the past year than women who had not experienced any *severe* violence and women who did not have the ability to negotiate condom use, respectively (Table 4). Greater accepting attitudes towards physical intimate partner violence was associated with increased odds of STI symptoms.

However, in multivariate logistic regression models adjusted for participant characteristics, only attitudes towards physical intimate partner violence was significantly associated with STI symptoms. Every unit increase in acceptance of physical intimate partner violence was associated with 38% greater odds of reporting STI symptoms in the past year.

Ability to refuse sex and negotiate condom use as moderators

We tested whether or not the ability to refuse sex and the ability to negotiate condom use moderated the relationships between intimate partner violence experiences and STI symptoms and between attitudes toward physical intimate partner violence and STI symptoms. Only one of the tested interaction terms was significant in our multivariate model. The association between having ever experienced any *severe* physical violence and STI symptoms was modified by whether or not the respondent could refuse sex (OR = 0.20; 95% CI = 0.05, 0.89; $p = 0.034$). Among those who could refuse sex, there was no statistical relationship between having ever experienced any *severe* physical violence and STIs (OR = 0.97; 95% CI = 0.71, 1.33), but among those who could not refuse sex, having ever experienced any *severe* physical violence was associated with a 5-fold greater odds of reporting STI symptoms in the last 12 months (OR = 5.19; 95% CI = 1.00, 27.08).

Discussion

This study provides unique insight into prevalence of intimate partner violence, women's attitudes towards intimate partner violence, and sexual health and behavioural outcomes among young Liberian women which can inform strategic planning for reducing violence within intimate partnerships. Participants were young Liberian women, aged 15–24, who were married or cohabitating with a male partner. The majority of these young women have lived their entire lives within violent conflict and post-conflict settings. Within this context, we aimed to describe the prevalence of and relationships between intimate partner violence experiences, attitudes toward physical intimate partner violence, ability negotiate safe sex, and STI symptoms. Findings from our study were consistent with previous research in Liberia (Allen and Devitt 2012; Carvalho and Schia 2011; LISGIS 2008b); the majority of women have experienced some form of intimate partner violence. Findings also suggest that experiences of intimate partner violence are associated with greater acceptance of intimate partner violence; greater acceptance of intimate partner violence was associated with an increased chance of reporting STI symptoms. Furthermore, women who experienced severe intimate partner violence and didn't believe they could refuse sex were five times more likely to report STI symptoms. These findings offer insight into attitudes that maintain and perpetuate intimate partner violence, but also provide suggestions for potential avenues of intervention, including interventions to change attitudes toward violence and careful implementation of empowerment strategies.

It is important to note recent Liberian history as a way to contextualise the findings of the current study. In 1989, an uprising led by the National Patriotic Front of Liberia succeeded in assassinating President William R. Tolbert Jr. and initiating a brutal civil war and 14 years of violence and atrocities. Peace was finally restored in Liberia in 2003, but not before over 250,000 Liberian civilians, including an estimated 50,000 children, had been killed. Nearly the entire population had been exposed to mass terror, including systematic execution, maiming, torture and rape, enslavement of women, and abduction of children to use as soldiers. Since 2003, through a strong United Nations military presence and massive international support, peace has been maintained and stability is returning, yet community and gender-based violence remain significant problems. While the HIV epidemic in Liberia is not as profound as in other Sub-Saharan countries — an estimated HIV prevalence of 3.8 to 4.0 (Gouws Mishra and Fowler 2008) — the overall sexual health of Liberian women is of particular concern. Liberian women face high rates of poor sexual and reproductive health

outcomes including adverse pregnancy outcomes, maternal mortality, and STIs. The psychological impact of the Liberian conflict is relevant to sexual health promotion and risk reduction intervention efforts. Post-conflict conditions in Liberia, including extreme poverty, traumatic stress, substance abuse, sexual and gender-based violence, transactional sex, the lack of health infrastructure, and the lack of sexual health promotion and risk reduction prevention programming lend themselves to the persistence and possible expansion of HIV epidemic and other, adverse sexual health outcomes, particularly among youth (Cheng 2009; Johnson et al. 2005; Kennedy et al. 2004)

The 2009 Mental Health Needs Assessment of Liberian Children, Adolescents and Young Adults reported, along with exposure to warfare and community violence, high rates of sexual and intimate partner violence contribute to high levels of unsafe sex, alcohol and drug use, and continued sexual and community violence (Ministry of Health and Social Welfare 2009). Consistent with a prior report (Johnson et al. 2008), our study found that young women in post-conflict Liberia experience high levels of moderate to severe physical, as well as sexual violence in their intimate relationships. Perhaps more troubling is our finding that, on average, young Liberian women are accepting of at least some physical violence in their intimate relationships. The majority of women endorsed at least one item indicating that physical violence was acceptable in relationships, including at least half of the sample agreeing that physical violence was acceptable if a woman argues with her partner/husband or neglects their children. Nearly half (48.7%) agreed that physical violence was acceptable if she went out without telling her partner/husband. Of particular importance in the context of STI risk, over a quarter (26.7%) of women agreed that physical violence was acceptable if she attempted to refuse sex with her partner/husband. Not surprisingly, women who experienced more severe physical violence and/or sexual violence had more accepting attitudes toward physical violence in their relationships. It is not clear from our data, however, if women who are more accepting of violence are more likely to enter violent relationships, or if accepting attitudes toward violence developed, perhaps as a method to cope, within relationships that become violent.

Further, in unadjusted analyses, both experiencing intimate partner violence and accepting attitudes toward intimate partner violence were associated with experiencing STI symptoms in the prior 12 months. When entered simultaneously, however, only accepting attitudes toward intimate partner violence made a unique significant contribution to the prediction of STI symptoms. In fact, for each item reflecting an accepting attitude toward intimate partner violence endorsed by a participant, there was a 38% increase of her likelihood of having STI symptoms in the past year. Given that young women who had greater acceptance of physical intimate partner violence were more likely to experience intimate partner violence, it is likely that experiencing intimate partner violence does not contribute uniquely to having STI symptoms, after taking attitudes toward intimate partner violence into account. This finding suggests that sexual risk reduction efforts and interventions may need to focus on changing attitudes towards intimate partner violence among young women since accepting attitudes are the link to STI symptoms.

One finding regarding STIs that was counter-intuitive was that young women who reported that they had the ability to negotiate condom use were also more likely to report STI symptoms. Our data do not provide information that can help explain this finding, though we posit a few possible explanations for consideration. First, it could be that in relationships where it is known that one or both partners have an STI, discussion of condoms may be seen as more relevant and acceptable. Second, it is possible that, given the age of the participants in this study, the intimate relationships reported on here are newer, and that STIs are in fact from prior relationships. Last, it is possible that in relationships where communication is

more open there is also more permissiveness around sexual behaviour among one or both partners, resulting in riskier relationships.

Among participants who experienced severe physical intimate partner violence, those who reported they cannot refuse sex in their relationship were much more likely to report STI symptoms than those who reported they can refuse sex. On the other hand, among women who reported they could refuse sex, there was no increased risk for STIs associated with experiencing physical violence. This strongly suggests that, in Liberia, as in many parts of the world, efforts to promote gender-equality and to empower women to safely refuse sex are important avenues to pursue to reduce sexual risk and ultimately to enhance women's health and quality of life.

While our study was one of the first to focus on the association between intimate partner violence and sexual and behavioural outcomes among a sample of young women from a low-income post-conflict setting and the first we aware of focused on Liberia, there are limitations that should be noted. First, the cross-sectional design limits our ability to identify temporality of intimate partner violence victimisation, negotiation of safer sex practices, and STI symptoms, and thus no cause-effect relationship can be established. We also relied on self-reported data from the Liberia Demographic Health Survey and there is no way of verifying reports of STIs and STI symptoms or history of intimate partner violence. Ideally STIs and STI symptoms would have been confirmed with an indicator such a medical records, laboratory results, and/or a physical examination. Self-reported data, however, is the standard measurement for experiences of intimate partner violence; furthermore, the Liberia Demographic Health Survey used a modified version of the Conflict Tactics Scale (Straus et al. 1996) which has been validated cross-culturally to enhance interpretation of intimate partner violence items. Another potential limitation was the possibility that the reports of the young women in the study may have been influenced by recall bias or misreporting. Previous research investigating intimate partner violence suggests that women do sometimes misinterpret/misreport questions regarding intimate partner violence and/or results are affected by the social stigma linked to violence disclosure (Ellsberg et al. 2008). However, this most often leads to under-reporting as opposed to over-reporting the incidence of violence.

Sexual health promotion and risk reduction interventions targeting young Liberian women must address the contextual influence of violence, including individual and community attitudes toward intimate partner violence (Tankink 2013). In fact, interventions focused on solely on sexual risk reduction may be inappropriate for women experiencing intimate partner violence for two reasons (Cavanaugh et al. 2010; Venables and Stadler 2012). First, women may be non-responsive to such interventions because of concern for their own personal safety. For instance, as demonstrated in our study, not being able to refuse sex was associated with greater likelihood of STI symptoms among those who experienced severe violence suggesting that attempts to negotiate safe sex practices may prompt physical violence and increase STI risk. Second, women may lack the means to implement risk reduction. Young Liberian women experiencing intimate partner violence may have particular difficulty implementing risk reduction given potential dependency upon male partners for basic needs (food/shelter), and being subject to a more male dominant culture in which women's power within sexual relationships is compromised (Tankink 2013). While empowerment-focused sexual health promotion interventions have demonstrated promise in reducing sexual risk behaviour for women experiencing intimate partner violence (Sikkema et al. 2010; Straus et al. 1996), multimodal prevention interventions that can address the norms and beliefs about violence and gender, women's sexual decision-making power within relationships, and increase safe sexual behaviour are recommended (Jewkes Morrell and Christofides 2009; Logan Cole and Leukefeld 2002; Roth et al. 2001). Some progress

has been made in this area (Roth et al. 2001; Tankink 2013; Venables and Stadler 2012), however, the generalisability of these interventions for Liberia is not clear because these interventions may have been implemented at different stages of rebuilding in post-conflict settings. Future research should assess the efficacy of interventions at different stages of rebuilding in post-conflict settings. Additionally, future interventions should include both structural and individual level strategies in Liberia. For example, at the structural level, governmental policies need to be reconstructed and consistently implemented to persecute those who exhibit violence against women, and structures should be put in place for women's empowerment. On an individual level, both men and women need to be educated about the consequences of violence against women and the long-term efforts of such violence. Given the pervasive violence that has persisted in Liberia for over 20 years, sexual health promotion and risk reduction intervention efforts in Liberia face a major hurdle. In order for interventions to improve sexual health and contain the HIV epidemic in Liberia to achieve full impact, it is vital that efforts to promote peace-building and change attitudes toward violence, particularly as it relates to violence against women.

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Table 1

Participant sociodemographic characteristics

| | Overall (N=592) |
|---|----------------------------|
| Respondent's age | 21.1 (0.14) |
| Respondent's education | |
| No education | 32.0% |
| Primary | 49.1% |
| Secondary or higher | 19.0% |
| Respondent currently working | |
| Yes | 53.0% |
| No | 47.0% |
| Marital status | |
| Married | 44.5% |
| Living together | 55.5% |
| Area | |
| Urban | 35.3% |
| Rural | 64.7% |
| Region | |
| Monrovia | 24.4% |
| North Western | 7.2% |
| South Central | 14.5% |
| South Eastern A | 8.4% |
| South Eastern B | 4.7% |
| North Central | 40.8% |
| Wealth index | |
| Poorest | 20.6% |
| Poorer | 22.3% |
| Middle | 23.8% |
| Richer | 20.0% |
| Richest | 13.2% |
| Total number of children ever born | 1.7 (0.05) |
| Had an STI symptom (i.e., sore/ulcer/genital discharge) in the last 12 months | |
| Yes | 36.8% |
| No | 63.2% |

^aValues presented are weighted means and standard errors for continuous variables and weighted percents for categorical variables.

Table 2

Prevalence of IPV Experiences, Attitudes towards Physical Intimate Partner Violence, and Ability to Negotiate Safe Sex among young women in Liberia (N=592)^a

| | N (%) |
|---|------------|
| Experiences of Intimate Partner Violence | |
| <i>Moderate physical violence</i> | |
| Partner/husband ever pushed her, shook her, or threw something at her | 18.5% |
| Partner/husband ever slapped her | 38.4% |
| Partner/husband ever twisted her arm or pulled her hair | 10.6% |
| Partner/husband ever punched her with his fist or with something that could hurt her | 9.2 |
| <i>Severe physical violence</i> | |
| Partner/husband ever kicked her, dragged her or beat her up | 17.8% |
| Partner/husband ever tried to choke her or burned her on purpose | 6.3% |
| Partner/husband ever threatened or attacked her with a knife, gun or any other weapon | 2.7% |
| Sexual violence | |
| Partner/husband ever physically forced her to do men business with him | 9.4% |
| Partner/husband ever forced her to do any sexual acts she did not want to | 5.0% |
| <i>Attitudes towards physical Intimate Partner Violence</i> | |
| Physical Violence is acceptable if... | |
| ...she goes out without telling him | 48.7% |
| ...she neglects the children | 50.8% |
| ...she argues with him | 54.2% |
| ...she refuses to have sex with him | 26.7% |
| ...she burns the food | 17.0% |
| Total number of instances in which physical violence is acceptable [M (SE)] | 1.9 (0.10) |
| <i>Ability to Negotiate Safe Sex</i> | |
| Ability to refuse sex | 74.1% |
| Ability to negotiate condom use | 47.2% |

^aValues presented are weighted means and standard errors for continuous variables and weighted percents for categorical variables.

Table 3

Linear regression models examining the associations between Intimate Partner Violence experiences, attitudes towards physical Intimate Partner Violence, and ability to negotiate safe sex among young women in Liberia^a

| Attitudes towards physical IPV ¹ | | | |
|---|------------|-----------------------------------|---------------------------------|
| | M (SE) | Unadjusted ² B (SE) | Adjusted ³ B (SE) |
| Ever experienced any <i>moderate</i> violence | | 0.17 (0.107) | -0.10 (0.122) |
| Yes | 2.1 (0.12) | | |
| No | 1.9 (0.10) | | |
| Ever experienced any <i>severe</i> violence | | 0.59 (0.087) ** | 0.67 (0.107) ** |
| Yes | 2.4 (0.16) | | |
| No | 1.9 (0.08) | | |
| Ever experienced any <i>sexual</i> violence | | 0.59 (0.120) ** | 0.26 (0.116) * |
| Yes | 2.5 (0.21) | | |
| No | 1.9 (0.10) | | |
| Ability to refuse sex | | -0.33 (0.123) ** | 0.03 (0.123) |
| Yes | 1.9 (0.07) | | |
| No | 2.2 (0.20) | | |
| Ability to negotiate condom use | | 0.15 (0.115) | 0.45 (0.097) ** |
| Yes | 2.0 (0.10) | | |
| No | 1.9 (0.10) | | |

¹ Higher scores indicate greater acceptance of physical Intimate Partner Violence

² Models examining individual unadjusted associations between intimate partner violence experiences and ability to negotiate safe sex and attitudes towards physical intimate partner violence.

³ Model simultaneously examining the associations between intimate partner violence experiences, ability to negotiate safe sex and attitudes towards physical intimate partner violence, including potential confounders (age, education, employment status, marital status, urban location, region, wealth, and number of children ever born)

* p<0.05;

** p<0.01

Table 4

Logistic regression models examining the associations between STI symptoms and IPV experiences, attitudes towards physical Intimate Partner Violence, and ability to negotiate safe sex

| | OR (95% CI) | |
|---|----------------------|----------------------|
| | Model 1 ^a | Model 2 ^b |
| Ever experienced any <i>moderate</i> violence | 1.17 (0.75, 1.85) | 0.84 (0.47, 1.51) |
| Ever experienced any <i>severe</i> violence | 1.73 (1.01, 1.96) * | 1.52 (0.71, 3.26) |
| Ever experienced any <i>sexual</i> violence | 0.72 (0.32, 1.59) | 0.55 (0.24, 1.30) |
| Attitudes toward physical IPV ^I | 1.25 (1.13, 1.38) ** | 1.38 (1.22, 1.55) ** |
| Ability to refuse sex | 1.33 (0.77, 2.29) | 0.93 (0.50, 1.73) |
| Ability to negotiate condom use | 1.54 (1.12, 2.13) ** | 1.23 (0.74, 2.06) |

^I Higher scores indicate greater acceptance of physical intimate partner violence

^a Unadjusted models showing individual associations with STI symptoms.

^b Adjusted model showing the associations of all predictors, modeled simultaneously, with STI symptoms, controlling for age, education, employment status, marital status, urban location, region, wealth, and number of children ever born.

* p<0.05

** p<0.01