Intimate Partner Violence among HIV-seropositive and HIV-seronegative Pregnant Women Receiving Partner Services in Kisumu, Kenya: Correlates and Incidence during Postpartum

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Abstract

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Introduction:

Intimate partner violence (IPV) is the most common form of violence amongst women. IPV experienced during pregnancy can expose women and their babies to fatal and non-fatal adverse outcomes. This study assessed socio-demographic factors associated with current or past intimate partner violence to better identify women who are at risk or those currently experiencing IPV.

Methods:

We evaluated the prevalence, incidence and correlates of lifetime IPV and IPV in the past 6 months and past month in pregnant women seeking antenatal care at the Kisumu County Hospital in Kisumu, Kenya. This study is a nested analysis within the Home-based Partner Education and Testing (HOPE) Study, which was a randomized trial with the aim of increasing the uptake of interventions to improve maternal and child health and reduce vertical and heterosexual HIV transmission. We conducted both a nested cross-sectional and cohort analysis, using data from standardized questionnaires to assess participant self-reported IPV by their current partner at baseline and at 6-months postpartum where women were asked about IPV that

had happened after the baseline visit. A woman was classified as having experienced IPV if she reported that her husband/partner had physically hurt her or forced her to participate in sexual activities that made her feel uncomfortable. Associations between baseline IPV, incident IPV and the correlates were assessed using univariate and multivariate logistics regressions.

Results:

Overall, among 1101 women screened, 929 (84%) reported never having experienced IPV; 73 (7%) reported having experienced IPV at least once in their lifetime, but not in the past 6 months (Lifetime IPV); 45 (4%) reported IPV in the past 6 months, but not in the past month (6 month IPV); and 54 (5%) reported IPV in the past month (1 month IPV). Women who reported IPV in the past month were found to have a higher gravidity, reported more lifetime sexual partners, were more likely to be in a polygamous marriage, and were less likely to have completed secondary school or higher, had higher incomes, and were more likely to report having been threatened or frightened by their current partner. When assessing incident IPV we found that women who reported IPV in the past 6 months at baseline were at 4-fold higher risk of experiencing IPV in the 6-month post-partum period (OR=4.39; 95% CI: 1.61, 11.99). This association remained after adjustment for lifetime sexual partners, marital status, educational level, and being threatened or frightened by current partner (OR= 3.89; 95% CI:1.34-11.28; p = 0.01). A prior primary paper of the HOPE study found that home-based partner testing was not associated with IPV.

Conclusions:

Women who self-reported experiencing IPV within the past 6 months at their antenatal visit were at a 4-fold greater risk of incident IPV in the late antepartum and postpartum periods. Screening for recent IPV may be an effective means of identifying women at risk of IPV in the near future

following an antenatal visit. It may be possible to target efforts to prevent IPV on these women. Further studies focused on assessing the incidence of IPV among pregnant women need to be conducted making sure to collect sociodemographic factors about the partner as these are very important in assessing the correlates of intimate partner violence.

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Introduction:

According to the World Health Organization (WHO), 1 in 3 women worldwide has experienced physical and/or sexual intimate partner violence (IPV) or non-partner sexual violence in their lifetime [1]. Studies have found that IPV affects access and adherence to services for prevention of mother-to-child HIV transmission (PMTCT), use of HIV services, antiretroviral therapy (ART) adherence, and additionally affects mental health in pregnant women [2]. Characterization of socio-demographic factors associated with current or past violence may help us better identify women who are at risk or those currently experiencing IPV and ensure provision of the most appropriate services.

IPV is the most common form of violence that women experience [1,3], and is typically defined as violence between current or past intimate partners that causes physical, sexual or psychological harm, including physical aggression, sexual coercion, psychological abuse and controlling behaviors [4]. Thus, in addition to physical injury, there are negative effects of violence against women that impact their mental, sexual and reproductive health. In addition, women's vulnerability to HIV is increased in the context of IPV [4]. Prior studies conducted in South Africa and Uganda have shown that women exposed to IPV in the form of physical and/or sexual abuse are more likely to acquire HIV infection [5,6] and as a result HIV-infected women may be victims of ongoing IPV. In addition, the following risk factors have been found to increase a persons' risk of violence: low education, child maltreatment, violence in the family, harmful use of alcohol, having multiple partners, attitudes about violence and gender inequality [1,3]. Past history of violence, marital discord and dissatisfaction and communication challenges between partners have been found to be risk factors for subsequent IPV [1].

According to the 2014 Kenya Demographic Health Survey (KDHS), physical violence in Kenya is not solely experienced by women, but also men; however, for this study we elected to focus on violence experienced by women. Of the women who participated in the KDHS survey, 57.1% of the general population of women in Nyanza province, where our study was conducted, had experienced physical violence at least once since age 15[7]. Women from Nyanza aged 15-49, had the second highest prevalence (14.4%) of ever experiencing physical violence during pregnancy. IPV during pregnancy was more common among pregnant women with three or more children, those with incomplete primary education, and those in the second or fourth wealth quintile [7]. One cross-sectional study of pregnant women from the Kisumu District Hospital reported other factors associated with IPV, such as witnessing maternal abuse in childhood, being multiparous, being in a polygamous relationship and having a partner who drinks alcohol or has a low level of education. In addition, having a husband or partner with tertiary education and both parties choosing each other, as opposed to having an arranged marriage, were protective factors against IPV [8].

One limitation of past IPV studies in Kenya and other sub-Saharan African countries is that most have been cross-sectional and have not been able to examine and define correlates of incident IPV. To better assess factors associated with incident IPV during pregnancy and in the postpartum period, we conducted a prospective study among 502 women enrolled in a clinical trial of couple counseling and testing in western Kenya. This study will add to the literature by providing a closer exploration of women from this region, characterizing those women in this region and similar rural high HIV prevalence regions in Sub-Saharan Africa, who are at risk, by defining demographic and social characteristics associated with past and future IPV.

Methods:

Study design and Population

This study is a nested analysis within the Home-based Partner Education and Testing (HOPE) Study (Grant ID: R01HD075108), which was a randomized trial with the aim of increasing the uptake of interventions to improve maternal and child health and reduce vertical and heterosexual HIV transmission. Pregnant women attending their first antenatal visit at Kisumu County Hospital from September 2013 to June 2014 were recruited for the study. Methods for the HOPE study are described in more detail in the primary paper [9].

Study Setting

The Kisumu County Hospital, located in Western Kenya is one of the key health facilities in Kisumu that serves communities in the Nyanza region. The site was selected because it has a high volume of new antenatal visits (~200/month), and high HIV prevalence among women presenting for antenatal care (~9.5-12%).

Eligibility Criteria

To be eligible for enrollment women had to be $\geq$ 14 years of age; $\geq$ 8 weeks gestation; in current stable partnership (married or cohabitating); not have a male partner present at the clinic visit; have a partner $\geq$ 18 years of age; plan to live $\leq$ 40 km from the clinic from time to screening until 9 months postpartum; willing to be randomized to intervention or standard of care; willing to participate in couple HIV testing and counseling; and not have experienced IPV in the form of physical, verbal, or sexual abuse in the past month. Inclusion criteria for the male participants was $\geq$ 18 years old and willing to participate in couple HIV testing and counseling. After women were found to be eligible and consented, they were randomized to either of the two arms: home based partner education and HIV testing (HOPE) which was scheduled to occur

within 2 weeks of enrollment or clinic-based testing as part of routine pregnancy services. In the latter arm, a written invitation was sent to the male partner that encouraged them to attend the clinic for couples HIV counseling and testing and a delayed home-based partner education and testing visit at 6 months postpartum. Questions related to IPV in the form of physical, sexual, and emotional violence were placed at the end of the screening surveys and were asked again at the 6 week and 6-month postpartum follow-up surveys. Based on the data collected in the main study, we conducted secondary analyses using both cross-sectional and cohort study designs. Because women who reported IPV in the month prior to the baseline visit were excluded from the trial, our analysis of incident IPV in the 6-months after enrollment was limited to those who reported no IPV in the past month at the baseline visit.

Measures

Dependent Variable

Baseline IPV and incident IPV were defined based on responses to a nurse-administered questionnaire with items related to physical, verbal and sexual violence committed by the current primary intimate partner. At baseline pregnant women were asked if they had been physically hurt by their current or another male partner or forced to participate in sexual activities that made them feel uncomfortable. The timing of IPV was categorized as ever but not in the past 6 months (ever IPV), in the past 6 months but not in the past month (6 month IPV), or in the past month (1 month IPV). The original surveys were coded with the following options (No; Yes, my current partner; Yes, another male partner). For purposes of our study, IPV was categorized into four categories: Never IPV, Ever IPV but not in the past 6 months, IPV in the past 6 months but not in

the past month, and IPV in the past month with our analysis limited to data about the current partner.

During the follow-up period, women who enrolled in the HOPE study completed questionnaires to assess incident IPV at 6-weeks and 6-months based on responses to the question of since the last visit, had their partner physically hurt them or forced them to participate in sexual activities that made them feel uncomfortable. Incident IPV was defined as having reported physical and sexual abuse at either of the follow-up visits. Women who did not complete a 6-month follow-up were excluded from the study.

Independent Variables

Sociodemographic characteristics that were assessed included: Female age (years), male partners age (years), age differences (years), gestational age (weeks), gravidity including current pregnancy, number of living children, number of lifetime sexual partners, marital status (unmarried, married-monogamous, or married-polygamous), educational attainment (primary school or less, some secondary school, secondary school completed or above secondary school), separate income (yes, no), household monthly income (<1,000 Ksh, 1,000-4999 Ksh, 5,000-9,999 Ksh and >10,000 Ksh), female self-reported HIV status, confirmed HIV status (only available for those women who enrolled in the study), male partner's HIV status (as reported by the woman), couple testing (yes, no), and having been threatened or frightened by the current male partner (yes, no).

Statistical Methods

For both the assessment of past and incident IPV, analysis was limited to IPV data collected about the current partner for consistent comparison. To assess factors associated with past IPV reported at baseline, univariate associations between IPV and sociodemographic factors of

interest were assessed by calculating odds ratios (OR) and associated p-values and 95% confidence intervals (95% CI) based on logistic regressions. To investigate incident IPV, we used logistic regression to compare the odds of incident IPV between those who reported no history of IPV at enrollment to those who reported past IPV. We also adjusted for potential confounders: education level, number of lifetime sexual partners, marital status, threatened or frightened by the current male partner (yes, no). These factors were selected based on past studies that have identified them as being associated with IPV and based on their association in this cohort with baseline report of IPV. We also evaluated other sociodemographic characteristics associated with incident IPV. The data was managed and analyzed in Stata 14.1 (StataCorp; College Station, Texas). This study was approved by the Kenya Ethics Review Committee and the University of Washington Human Subjects Division.

Results:

Cohort Characteristics

A total of 1101 women who were attending an antenatal clinic were screened for the study. None of the women were missing information about their baseline IPV. Median age of women was 24 years (interquartile range [IQR], 21 to 28) and the median age of the male partner was 30 years (IQR, 26 to 35). The median age difference between men and women was 5 years (IQR, 3 to 8). The median gravidity was 2 (IQR, 1 to 3) and women reported having a median of 1 living child (IQR, 0 to 2). 518 (47%) women reported having their own separate income. Majority of the women had completed primary school or less 462 (41.96%), followed by secondary school completed 240 (21.80%), above secondary school 200 (18.17%), lastly, some secondary school 198 (17.98%) (Table 1).

Baseline Risk Factors of Past History of IPV

Of the 1101 women who were screened, 929 (84%) reported never having experienced IPV with their current partner; 73 (7%) reported having experienced IPV committed by their current partner at least once in their lifetime, but not in the past 6 months (Lifetime IPV); 45 (4%) reported IPV in the past 6 months, but not in the past month (6 month IPV); and 54 (5%) reported IPV in the past month (1 month IPV). We evaluated potential correlates of ever IPV, 6 month IPV, and 1 month IPV, relative to women who reported that they had never experienced IPV. Each category was mutually exclusive such that, for example, women who reported IPV in the past 6 months were not included in the ever IPV category (Table 2). We found that women who reported IPV in the past month had a higher gravidity (Odds Ratio (OR)=1.22 per additional birth; 95% CI: 1.00-1.50; p=0.05), reported more lifetime sexual partners (OR= 1.21 per partner; 95% CI: 1.02-1.42; p=0.03), were more likely to be in a polygamous marriage compared to those who were unmarried (OR=4.1 ; 95% CI: 1.10-15.30; p=0.04), were less likely to have completed secondary school or above secondary school (OR=0.29; 95% CI: 0.11-0.75; p=0.01 and OR=0.14; 95% CI: 0.03-0.58; p=0.01, respectively), were more likely to have an income of 1,000-4999 Ksh or 5,000 – 9,999 Ksh compared to <1, 000 Ksh (OR = 6.71; 95% CI: 2.15-20.94; p <0.01 and OR =3.43; 95% CI: 1.15-10.24; p=0.03) and were more likely to have reported being threatened or frightened by their current partner (OR = 72.98; 95% CI: 36.38 – 146.38; p <0.01).

We found similar patterns of association for 6-month and ever IPV with the exception that higher gestational age was associated with ever IPV (OR= 1.04 per month; 95% CI: 1.00-1.08; p= 0.03). We found trends indicating that 6 month IPV and 1 month was more common among women who self-reported being HIV positive (OR = 1.61; 95% CI: 0.65, 3.98; p = 0.31

and OR = 1.43; 95% CI: 1.87 (0.91, 3.86); p =0.09, respectively). In addition, there was a trend indicating that the odds of 1-month IPV were higher among women with an older partner (OR = 1.28 per five-year age difference; 95% CI: 0.95, 1.69; p = 0.13).

Intimate Partner Violence in the Postpartum Period

Figure 1 illustrates the pregnant women who were first considered eligible for the HOPE study and then the women that were considered eligible for the cohort study exploring incident IPV. Of the 1101 women who were screened, 481 were deemed to be ineligible for the main study: 134 were too early in the gestation period; 83 had the male partner present; 96 were not in a relationship; 81 were not married or cohabitating; 6 had a male partner that was <18 years old; 136 lived outside study boundaries; and 72 had experienced some form of intimate partner violence in the past month. A total of 620 (56%) were deemed eligible, but 19 (3.1%) declined to be enrolled in the study. This left 601 (96.9%) pregnant women who consented to the study and were randomized to either the HOPE or clinic based testing. Of the 601 women, 99 (16.5 %) did not complete their 6-month follow-up and were excluded from the analysis leaving a total of 502 women included in the analysis of incident IPV.

Of the 502 women who completed their 6-month follow-up, 46 (9%) experienced incident IPV in the post-partum period. Of the 443 women who reported no lifetime IPV at baseline 37 (8%) reported IPV during the 6-months of follow-up compared to 3 (10%) of the 29 women who reported ever IPV at baseline (OR=1.27; 95% CI: 0.36, 4.38) and 6 (29%) of 21 women who reported 6 month IPV at baseline (OR=4.39; 95% CI: 1.61, 11.99) (Table 3). After adjustment for lifetime sexual partners, marital status, educational level and having been threatened and frightened by a current partner, we found that women who reported 6 month IPV

were still at about a 4-fold increased risk of incident IPV (OR= 3.89; 95% CI:1.34-11.28; p = 0.01).

Correlates of Incidence IPV

Table 4 reports the results of crude and adjusted associations with incident IPV. We found that incident IPV was less common among women who had completed above secondary school education (OR = 0.28; 95% CI: 0.08-0.94; p = 0.04). In addition, women who reported that their household monthly income was ≥10,000 Ksh (equivalent to $100 USD) were less likely to report incident IPV compared to those with a monthly income <1,000 Ksh ($10 USD) (OR = 0.40; 95% CI: 0.16, 1.02; p = 0.05). Adjustment for potential confounders did not meaningfully change any of the crude associations.

Discussion:

In this cohort of pregnant women who were seeking antenatal care at the Kisumu District Hospital in Kisumu, Kenya, we observed that women who reported IPV committed by their current partner in the past 6 months prior to enrollment were at a 4-fold higher risk of incident IPV compared to women who reported never having experienced IPV by their current partner. In addition, we found that higher levels of education and higher levels of income were associated with lower risk of incident IPV. Our study also found that 16% (172/1101) of women reported baseline IPV and 9% (46/502) of women reported incident IPV during pregnancy and postpartum. These finding are on the lower end of the estimates in different African countries, where IPV prevalence among pregnant women is one of the highest globally. A systematic review of studies on IPV in pregnant women found proportions ranging from 2% to 57% [10]. In addition, a study done in the same population in Kenya, reported an IPV prevalence of 20%

(physical or sexual) during pregnancy [8]. We attribute our lower estimates to the exclusion of women who had experienced IPV in the past month during the follow-up period. Also, there is potential underreporting of IPV among the women who self-selected out of our study.

The major finding that there was an association between past IPV and incident IPV is in line with other studies that have concluded that past IPV or experiencing violence prior to pregnancy is a risk factor for incident IPV. In Rwanda and Nigeria similar findings were reported [11-13]. These studies also raised the need to collect data about whether women experienced abuse during their childhood.

When we looked at factors associated with baseline IPV, more lifetime sexual partners, lower education, polygamous marriage, lower education and being threatened and frightened by a current partner were found to be associated. Our findings related to the association of IPV and polygamy were similar to those found in the Makayato study which assessed the prevalence and factors associated with intimate partner violence [8]. But unlike this study, which found that a woman's educational level was not associated with IPV, we found that higher education was associated with a lower likelihood of IPV. We hypothesize that this difference could be due to differing study methodology, more specifically our categorization of women's educational levels in to multiple categories ("Primary school or less", "Some secondary school", "Secondary school completed" and "Above secondary school" verse "Secondary and below" and "Tertiary and above").

Women who had completed above secondary school education were at lowest risk of IPV, which is in line with a study conducted in the general population of women in Kenya. Although researchers in this study found that although higher education among women reduced their risk of IPV, being employed and having a higher education/occupational status than her

partner increased a woman's risk of IPV. In addition, other factors such as age differences between partners, illiteracy, and a lack of autonomy and access to information increased IPV vulnerability among women [14]. Our study would have benefited from consistent collection of partner data at baseline and study completion to better assess social factors as risks for IPV, but one of the requirements of the HOPE was that the male partner was not in attendance at the screening meeting.

Based on the literature we had expected to find an association between HIV and IPV. Similar to the Makayato study [8], we found no association between female self-reported HIV and/or confirmed female HIV status with baseline IPV nor incident IPV. Several studies in Africa have found an association between HIV infection and IPV, with a systematic review of cross sectional data from 12 demographic health surveys from ten African countries finding associations between HIV infection in women and physical violence, emotional violence, and male controlling behavior (AOR: 1.2 to 1.7; P <0.0001 to 0.0058). In addition, the study found a weaker association between sexual violence and HIV, with significance only in women in their first union [15]. The differences in our conclusions could be due to differences in how IPV was categorized or the lack of power in our study since we combined those who reported physical IPV with those who reported sexual IPV. A larger study in this same population is needed to better make conclusions about associations between IPV and HIV.

Primary analysis of the HOPE study found that there was no association between home based partner testing and IPV [9].

Study Limitations

Our study has some limitations. First, the study relies on the accuracy and completeness of the HOPE study screening data which was not solely created to assess IPV in this study population.

The study did not collect specific information about the male partner that was related to known risk factors for IPV. In addition, common to survey studies, underreporting of IPV may have occurred in our study. In the cross-sectional portion of the study we cannot conclude causality. The women screened and enrolled in the study were pregnant women who were at the Kisumu County Hospital for routine antenatal care. These women may not be a representative sample of women who go to other hospitals (public or private) in the study region and women from different geographical regions in Kenya, Africa and the world. In addition, the relatively small number of cases of incident IPV limited our power to detect true associations. Despite these limitations, the study adds to the current limited literature assessing the characteristics of incident IPV in pregnant women in this region of the world.

Conclusion:

To our best knowledge, this is the first prospective study in the region assessing both the baseline IPV and IPV at the 6-month post-partum period in the same population. The findings of our study confirm some major findings found in other studies, but also identify the need for larger prospective studies to confirm some of the findings that are not agreeable across studies. More specifically, further studies assessing the incidence of IPV in pregnant women need to be conducted making sure to collect sociodemographic factors about the partner as these are very important in assessing the correlates of intimate partner violence.

Our finding about the 4-fold increase in incident IPV among those who have experienced recent IPV, raises concern that persons who have experienced IPV in the past month are those that are at highest risk and need to be sought and monitored by health professionals. More

specifically, screening women during the antenatal period and working to prevent future harm for women who report past IPV, low education, polygamous relations and low income.

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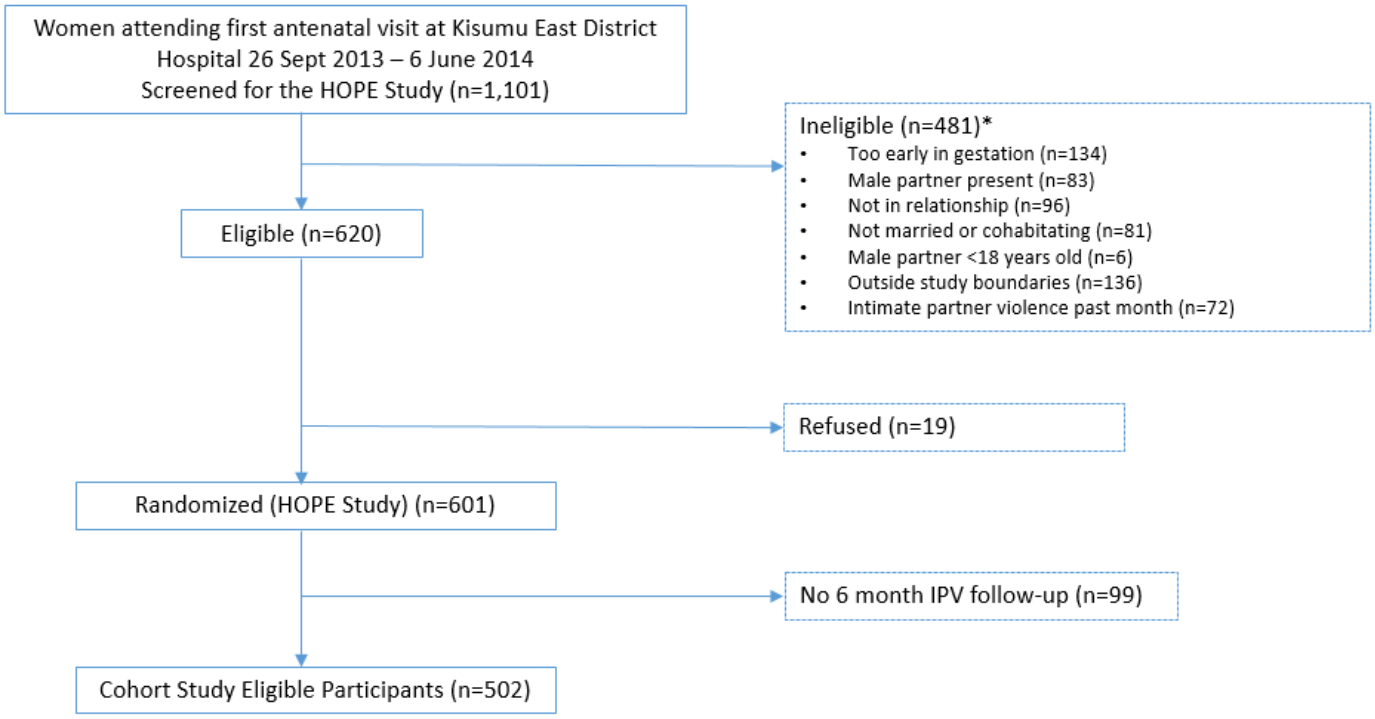

FIGURE 1. Screening, enrollment and follow-up of women who reported past and incident IPV.
* Women could be ineligible for more than one reason.

TABLE 1. Baseline Socio- Demographic Characteristics of Pregnant Women who were Screened for the Home- Based Partner Education and Testing (HOPE) Study, by Physical and/or Sexual IPV Experienced.

Baseline Characteristics	Overall (N=1101) N (%) or Median (IQR)	Never IPV (N=929) N (%) or Median (IQR)	Ever IPV, but not past 6 months (N=73) N (%) or Median (IQR)	IPV – past 6 months, never past month (N = 45) N (%) or Median (IQR)	IPV past month (N=54) N (%) or Median (IQR)
Female age, (Years)	24 (21-28)	24 (21-27)	25 (21-29)	24 (20-28)	23 (20-27)
Male Partners age, (Years)*	30 (26-35)	29 (26-35)	30 (26-35)	30 (25-36)	30 (27-35)
Difference in Partners Ages ***	5 (3-8)	5 (3-8)	6 (3-9)	6 (3-8.5)	6 (4-10)
Gestational age, (Weeks)*	20 (15-25)	20 (15-25)	21 (17-26)	20 (16-24)	22 (16-26)
Gravidity including current pregnancy*	2 (1-3)	2 (1-3)	3 (2-3)	2 (1-3)	2 (1-3)
No. living children*	1 (0-2)	1 (0-2)	1 (1-2)	1 (0-2)	1 (1-2)
No. lifetime sexual partners*	2 (2-3)	2 (1-3)	2 (2-3)	2 (2-3)	3 (2-3)
Marital Status*					
Unmarried	90 (8.17%)	77 (8.29%)	5 (6.85%)	5 (11.11)	3 (5.56%)
Married, monogamous	820 (74.48%)	696 (74.92%)	58 (79.45%)	31 (68.89%)	35 (64.81%)
Married, polygamous	94 (8.54%)	69 (7.43%)	6 (8.22%)	8 (17.78%)	11 (20.37%)
Educational Level*					
Primary school or less	462 (41.96%)	374 (40.26%)	34 (46.58%)	24 (53.33%)	30 (55.56%)
Some secondary school	198 (17.98%)	154 (16.58%)	22 (30.14%)	5 (11.11%)	17 (31.48%)
Secondary school completed	240 (21.80%)	218 (23.47%)	10 (13.70%)	7 (15.56%)	5 (9.26%)
Above secondary school	200 (18.17%)	182 (19.59%)	7 (9.59%)	9 (20.00%)	2 (3.70%)
Has separate income*	518 (47.05%)	425 (45.75%)	43 (58.90%)	21 (46.67%)	29 (53.70%)
Household Monthly Income*					
Less than 1000 Ksh	195 (17.71%)	184 (19.81%)	3 (4.11%)	4 (8.89%)	4 (7.41%)
1000-4999 Ksh	118 (10.72%)	96 (10.33%)	6 (8.22%)	2 (4.44%)	14 (25.93%)
5000-9999 Ksh	311 (28.25%)	255 (27.45%)	19 (26.03%)	18 (40.00%)	19 (35.19%)
10000 Ksh and above	425 (38.60%)	352 (37.89%)	40 (54.79%)	16 (35.56%)	17 (31.48%)
Female Self-Reported HIV Status*					
HIV Negative	870 (79.42%)	742 (79.87%)	60 (82.19%)	28 (62.22%)	40 (74.07%)
HIV Positive	122 (11.08%)	99 (10.66%)	7 (9.59%)	6 (13.33%)	10 (18.52%)
Male Partners Self-Reported HIV Status*					
HIV Negative					
HIV Positive	543 (49.32%)	454 (48.87%)	44 (60.27%)	20 (44.44%)	25 (46.30%)
	73 (6.63%)	59 (6.35%)	5 (6.85%)	4 (8.89%)	5 (9.26%)
Couple Testing * **					
No	710 (64.49%)	597 (64.26%)	49 (67.12%)	33 (73.33%)	31 (57.41%)
Yes	386 (35.06%)	329 (35.41%)	23 (31.51%)	12 (26.67%)	22 (40.74%)

Threatened or Frightened by Partner					
No IPV	985 (89.46%)	894 (96.23%)	47 (64.38%)	30 (66.67%)	14 (25.93%)
Yes IPV	116 (10.54%)	35 (3.77%)	26 (35.62%)	15 (33.33%)	40 (74.07%)

Data are presented as n (%) or median (range) unless otherwise specified.

*96 missing partners age; 3 preferred not to respond for gestational age; 1 missing gravidity; 61 missing number of living children; 13 preferred not to respond for no. of lifetime sexual partners; 6 were not sure about no. of lifetime sexual partners; 97 missing marital status; 1 preferred not to respond for education level; 4 preferred not to respond for separate income; 52 preferred not to respond for household monthly income; 106 missing female self-report HIV status; 1 preferred not to respond for female self-report HIV status; 2 were not sure for female self-report HIV status; 482 missing partners HIV status; 3 were not sure of partners HIV status; 1 preferred not to respond to HIV tested with partner.

*** 5 missing couple testing; 96 missing difference in partner ages (male minus female age)

TABLE 2. Correlates of Physical and/or Sexual Intimate Partner Violence in the Pregnant Women.

Characteristics	Ever IPV, but not in the past 6 months*		IPV in the past 6 months, but not in the past month*		IPV in the past month*	
	OR (95% CI)	p-value	OR (95% CI)	p-value	OR (95% CI)	p-value
Female age (years)**	1.22 (0.95, 1.54)	0.09	1.05 (0.77, 1.40)	0.75	0.90 (0.70, 1.22)	0.47
Male Partner's age (years)**	1.16 (1.00, 1.40)	0.08	1.05 (0.86, 1.34)	0.63	1.00 (0.82, 1.28)	0.84
Age Differences**	1.03 (0.98, 1.08)	0.31	1.03 (0.97, 1.10)	0.39	1.28 (0.95, 1.69)	0.13
Gestational age (weeks)	**1.04 (1.00, 1.08)**	**0.03**	1.01 (0.97, 1.06)	0.65	1.02 (0.98, 1.07)	0.30
Gravidity including current pregnancy	**1.42 (1.21, 1.66)**	**<0.01**	1.17 (0.94, 1.45)	0.16	**1.22 (1.00, 1.50)**	**0.05**
No. of living children	**1.36 (1.15,1.61)**	**<0.01**	1.08 (0.85, 1.40)	0.53	1.18 (0.96, 1.46)	0.12
No. of lifetime sexual partners	0.91 (0.74, 1.12)	0.39	1.10 (0.90, 1.35)	0.33	**1.21 (1.02, 1.42)**	**0.03**
Marital Status						
Unmarried	1 (ref)		1 (ref)		1 (ref)	
Married, monogamous	1.28 (0.50, 3.30)	0.60	0.69 (0.26, 1.82)	0.45	1.29 (0.39, 4.30)	0.68
Married, polygamous	1.34 (0.39, 4.58)	0.64	1.79 (0.56, 5.72)	0.33	**4.1 (1.1, 15.30)**	**0.04**
Educational Attainment						
Primary school or less	1 (ref)		1 (ref)		1 (ref)	
Some secondary school	1.57 (0.89, 2.80)	0.12	0.05 (0.19, 1.35)	0.17	1.38 (0.74, 2.57)	0.32
Secondary school completed	0.50 (0.24, 1.04)	0.06	0.50 (0.21, 1.18)	0.11	**0.29 (0.11, 0.75)**	**0.01**
Above secondary school	**0.42 (0.18, 0.97)**	**0.04**	0.77 (0.35, 1.70)	0.52	**0.14 (0.03, 0.58)**	**0.01**
Earns a separate income	**1.69 (1.04, 2.74)**	**0.03**	1.03 (0.57, 1.90)	0.93	1.36 (0.79, 2.37)	0.27
Household monthly income						
<1,000 Ksh	1 (ref)		1 (ref)		1 (ref)	
1,000-4,999 Ksh	3.83 (0.94, 15.66)	0.06	0.96 (0.17, 5.33)	0.96	**6.71 (2.15, 20.94)**	**<0.01**
5,000-9,999 Ksh	**4.57 (1.33, 15.67)**	**0.02**	**3.25 (1.08, 9.75)**	**0.04**	**3.43 (1.15, 10.24)**	**0.03**
>10,000 Ksh	**6.97 (2.13, 22.83)**	**<0.01**	2.09 (0.69, 6.34)	0.19	2.22 (0.74, 6.70)	0.16
Female self-reported HIV -positive	0.87 (0.39, 1.97)	0.75	1.61 (0.65, 3.98)	0.31	1.87 (0.91, 3.86)	0.09
Male Partners HIV-positive	0.87 (0.33, 2.29)	0.79	1.54 (0.51, 4.66)	0.45	1.54 (0.57, 4.20)	0.40
Couple Testing						
No	1 (ref)		1 (ref)		1 (ref)	
Yes	0.85 (0.51, 1.42)	0.54	0.66 (0.34, 1.30)	0.23	1.29 (0.73, 2.26)	0.38
Threatened or Frightened by Current Partner						
No IPV	1 (ref)		1 (ref)		1 (ref)	
Yes IPV	**14.13 (7.86, 25.39)**	**<0.01**	**12.77 (6.30, 25.87)**	**<0.01**	**72.98 (36.38, 146.38)**	**<0.01**

*Analyses are relative to the Never IPV group

**Odds ratio estimates for age = per 5-year difference in age

TABLE 3. Baseline IPV and Incident IPV- Crude and Adjusted Estimates (N=502)

Intimate Partner Violence	n [N]	%	OR (95% CI)	p-value	AOR (95% CI) **	%
Physical and/or Sexual Intimate Partner Violence*						
Never IPV	37 [443]	8%	1 (ref)			
Ever IPV, but not past 6 months	3 [29]	10%	1.27 (0.36, 4.38)	0.71	1.02 (0.28, 3.76)	0.97
IPV – past 6 months, never past month	6 [21]	29%	4.39 (1.61,11.99)	<0.01 (0.004)	3.89 (1.34, 11.28)	0.01

*Missing 9 for Physical and/or Sexual IPV

**Adjusted for education, number of lifetime sexual partners, polygamy and being threatened or frightened by current partner

TABLE 4. Follow-up Socio- Demographic Characteristics of Pregnant Women, by Incident Physical and/or Sexual IPV Experienced. (N=502)						
Characteristics	**n [N]**	**%**	**OR (95% CI)**	**p-value**	**AOR (95% CI)****	**p-value**
Female age, (Years)			0.95 (0.89,1.02)	0.18	0.97 (0.90, 1.04)	0.34
Male Partners age, (Years)*			0.97 (0.93, 1.02)	0.27	0.96 (0.91, 1.02)	0.20
Difference in Partners Ages*$			0.99 (0.94, 1.06	0.87	0.98 (0.92, 1.04)	0.51
Gestational age, (Weeks)*			1.04 (0.99, 1.09)	0.12	1.00 (0.99, 1.00)	0.94
Gravidity including current pregnancy*			0.88 (0.68, 1.13)	0.32	0.82 (0.64, 1.06)	0.13
No. living children*			0.88 (0.67, 1.14)	0.34	0.79 (0.59, 1.05)	0.11
No. lifetime sexual partners*			1.05 (0.83, 1.33)	0.66		
Marital Status*						
Unmarried	0 [2]	0%	1			
Married, monogamous	41 [441]	9%	1 (ref)			
Married, polygamous	5 [49]	10%	1.10 (0.42, 2.95)	0.84		
Educational Level*						
Primary school or less	26 [217]	12%	1 (ref)			
Some secondary school	9 [83]	11%	0.89 (0.40, 1.99)	0.78		
Secondary school completed	8 [110]	7%	0.58 (0.25, 1.32)	0.19		
Above secondary school	3 [83]	4 %	0.28 (0.08, 0.94)	0.04		
Has separate income*						
No	26 [243]	11%	1 (ref)			
Yes	20 [249]	8%	0.73 (0.39, 1.34)	0.31	0.80 (0.43, 1.51)	0.50
Household Monthly Income*						
Less than 1000 Ksh	8 [58]	14%	1 (ref)			
1000-4999 Ksh	3 [45]	7%	0.45 (0.11, 1.79)	0.25	0.39 (0.10, 1.60)	0.19
5000-9999 Ksh	22 [158]	14%	1.01 (0.42, 2.42)	0.98	0.85 (0.35, 2.07)	0.72
10000 Ksh and above	13 [216]	6%	0.40 (0.16, 1.02)	0.05	0.38 (0.14, 1.03)	0.06
Female Self-Reported HIV Status*						
HIV Negative	35 [403]	9%	1 (ref)		1 (ref)	
HIV Positive	6 [59]	10%	1.19 (0.48, 2.96)	0.71	1.00 (0.38, 2.58)	0.99
Confirmed Female HIV Status						
HIV Negative	34 [408]	8%	1 (ref)		1 (ref)	
HIV Positive	13 [94]	14%	1.77 (0.89, 3.49)	0.10	1.53(0.74, 3.17)	0.26
Male Partners Self-Reported HIV Status*$						
HIV Negative	20 [248]	8%	1 (ref)		1 (ref)	
HIV Positive	4 [40]	10%	1.26 (0.41, 3.92)	0.68	1.00 (0.30, 3.36)	1.00
Couple Testing						
No	28 [302]	9%	1 (ref)		1 (ref)	
Yes	18 [191]	9%	1.02 (0.55, 1.90)	0.96	1.19 (0.62, 2.27)	0.61

Threatened or Frightened by Current Partner				
No IPV	42 [467]	9%	1 (ref)	
Yes IPV	4 [26]	15%	1.84 (0.60, 5.59)	0.28

*9 missing female age; 9 missing male partner age; 9 missing difference in partners age; 11 missing gestational age; 10 missing gravidity; 28 missing no. of living Children; 15 missing no. of sexual partners; 10 missing marital status; 9 missing educational attainment; 10 missing separate income; 25 missing household income; 40 missing female self-report HIV; 214 missing male partners self-reported HIV status; 196 missing HIV tested with partner; 9 missing couple test; 9 missing threatened and frightened by partner.

$Female participant reported male partner's HIV status; Difference in partners age was calculated by subtracting the males age from the females age.

**Adjusted for education, number of lifetime sexual partners, polygamy and being threatened or frightened by current partner