

# Intimate partner violence during pregnancy in Zimbabwe: a cross-sectional study of prevalence, predictors and associations with HIV

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## Abstract

**OBJECTIVE** To describe the occurrence, dynamics and predictors of intimate partner violence (IPV) during pregnancy, including links with HIV, in urban Zimbabwe.

**METHODS** A cross-sectional survey of 2042 post-natal women aged 15–49 years was conducted in six public primary healthcare clinics in low-income urban Zimbabwe. An adapted WHO questionnaire was used to measure IPV. Multivariate logistic regression was used to assess factors associated with IPV and severe (six or more episodes) IPV during pregnancy.

**RESULTS** 63.1% of respondents reported physical, emotional and/or sexual IPV during pregnancy; 46.2% reported physical and/or sexual violence, 38.9% sexual violence, 15.9% physical violence and 10% reported severe violence during pregnancy. Physical violence was less common during pregnancy than during the last 12 months before pregnancy (15.9% [95% CI 14.3–17.5] *vs.* 21.3% [95% confidence interval 19.5–23.1]). Reported rates of emotional (40.3% [95% CI 38.1–42.3] *vs.* 44.0% [95% CI 41.8–46.1]) and sexual violence (35.6% [95% CI 33.5–37.7] *vs.* 38.9% [95% CI 36.8–41.0]) were high during and before pregnancy. Associated factors were having a younger male partner, gender inequities, past abuse, problem drinking, partner control of woman's reproductive health and risky sexual practices. HIV status was not associated with either IPV or severe IPV, but reporting a partner with a known HIV status was associated with a lower likelihood of severe abuse.

**CONCLUSION** The rates of IPV during pregnancy in Zimbabwe are among the highest ever reported globally. Primary prevention of violence during childhood through adolescence is urgently needed. Antenatal care may provide an opportunity for secondary prevention but this requires further work. The relationship between IPV and HIV is complex in contexts where both are endemic.

**keywords** intimate partner violence, pregnancy, HIV, prevalence, risk factors, Zimbabwe

## Introduction

Intimate partner violence (IPV) is a serious public health and human rights problem across the globe with negative impacts on women's and child health as well as high use of health services (Campbell 2002; García-Moreno *et al.* 2005). IPV during pregnancy increases women's vulnerability to ill health both to herself and to her unborn child, in addition to the changes in physical, social, sexual and economic circumstances during pregnancy (Heise *et al.* 2002; Shah & Shah 2010). The WHO multicountry study on violence and women's health found 1–28% women reporting violence during pregnancy across 10 countries

(García-Moreno *et al.* 2005). A more recent systematic review of the prevalence of IPV during pregnancy in Africa found a wider range of between 2.3% and 57.1% women reporting such violence (Shamu *et al.* 2011). Gender-based violence including IPV is considered a structural driver of HIV (Jewkes *et al.* 2006a,b; Auerbach *et al.* 2011) but some studies show insignificant associations between IPV and HIV (Nyamayemombe *et al.* 2010; Hallett *et al.* 2006).

Two systematic reviews of risk factors associated with IPV during pregnancy found young age, poverty, marital status, past exposure to violence (childhood sexual abuse) and alcohol abuse as consistent risk factors across studies

S. Shamu *et al.* **Intimate partner violence during pregnancy**

(Taillieu & Brownridge 2010; Shamu *et al.* 2011). Sexual risk behaviours and HIV-positive status were associated with IPV in some studies but not others (Campbell *et al.* 2008; Shamu *et al.* 2011). Similar risk factors have been reported in studies of IPV overall (Jewkes 2002; Jewkes *et al.* 2002; Abramsky *et al.* 2011). Perpetration studies have provided further evidence of the role of gender inequality and male controlling behaviours (Jewkes *et al.* 2006a,b, 2012). All these factors are critical for intervention, which has been a neglected research area. Jewkes' (2010) conceptual framework, based on evidence across the world, postulates that gender-based violence and HIV risk both stem from gender inequity and also deepen gender power differentials. Male power dominance in relationships and recurring exercise of violence against partners teach women not to resist attempts to abuse women.

Three reviews of studies on IPV during pregnancy (Devries *et al.* 2010; Taillieu & Brownridge 2010; Shamu *et al.* 2011) showed significant diversity across studies both in methods and conceptualisation of IPV, resulting in wide ranges of reported prevalence rates. Variations in the time during pregnancy when the interviews were conducted affect prevalence reported – those conducted at the onset of pregnancy record lower prevalence (Johnson *et al.* 2003), whilst those conducted at the end of pregnancy or soon after delivery record higher prevalence (Farid *et al.* 2008). Some studies also interviewed women as long as 18 months (Guo *et al.* 2004) or even – in Demographic and Health Surveys (DHS) – 5 years after delivery, likely resulting in lower prevalence due to recall bias. There are also differences in the number of pregnancies in which IPV was measured: some studies measured IPV in one pregnancy; others referred to all pregnancies a woman had ever had in the case of the DHS (Devries *et al.* 2010), also influencing prevalence and comparability. Many studies use small sample sizes, especially those from Africa (Shamu *et al.* 2011). IPV has been operationalised in different ways, although studies are increasingly using common instruments (Rabin *et al.* 2009). In addition to methodological differences, different prevalence rates also reflect real, substantive differences between cultures (Shamu *et al.* 2011).

The antenatal and post-natal periods have been identified as windows of opportunity for identifying women who experience abuse for development of interventions. This is very relevant for Zimbabwe, where up to 91.4% pregnant women attend antenatal care clinics with similar high levels of use of health services in the post-partum period (Munjanja *et al.* 2009). The country has high coverage of antenatal and post-natal care despite the current political and economic problems. Only two studies on

IPV have been conducted in Zimbabwe over the past two decades but neither focused on pregnancy (Watts *et al.* 1998; CSO and Macro 2007). Measuring prevalence of IPV during pregnancy helps us to understand IPV. Understanding the factors associated with IPV during pregnancy is necessary to plan prevention interventions with both men and women, as well as appropriate health sector interventions. In this article, we present the findings of a study reporting the prevalence of various forms of IPV including severity of the abuse throughout the pregnancy period as well as factors associated with IPV during pregnancy.

## Methods

### Cross-sectional study

A cross-sectional study of post-natal 15 to 49-year-old women attending either 10 days or 6 weeks post-natal clinics was conducted at six low-income urban clinics in Harare between May and September 2011. We calculated sample size (2024 participants) based on a South African study (Dunkle *et al.* 2004). Following the WHO (García-Moreno *et al.* 2005) guidelines, we recruited and trained female interviewers (six) for 7 days before conducting fieldwork. We conveniently recruited participants from the clinic queues and administered the questionnaire (face-to-face interviews) in Shona to all women until the required number was reached.

### Data collection

We adapted the WHO multicountry study questionnaire (García-Moreno *et al.* 2005) to measure violence against women for the study. The adaptation included adding the pregnancy period to IPV questions and adding HIV-related factors to the questionnaire. The questionnaire covered socio-demographic characteristics, behaviours, reproductive health and sexual risk factors of women and their current or most recent partners. The choice of variables for risk factor analysis was based on previous theoretical studies (Jewkes 2010) especially the ecological basis of risk factors (Heise 1998), literature in Zimbabwe (Shumba 2001) and our formative qualitative research with women and midwives about local patterns and meanings of sexuality and violence, particularly in intimate partnerships (Shamu 2012). We tested the questionnaire among 60 post-natal women at a clinic, and the necessary adaptations were made.

Intimate partner violence was measured using six physical violence questions, three sexual violence questions and four questions for emotional violence. We also asked

**S. Shamu *et al.* Intimate partner violence during pregnancy**

whether the violence was experienced in the year before her most recent pregnancy to measure past-year violence. Answering positive to one question in each of the specific types of violence was coded as that type of violence. To measure frequency and severity, we asked whether any of these acts happened once, twice, thrice or more during pregnancy and these were coded as low frequency (1–2 experiences) and high frequency (three or more experiences) during pregnancy.

We assessed whether a woman ever experienced physical and/or sexual abuse before age 15. The physical abuse question asked whether, before age 15, anyone ever excessively beat or physically mistreated her in any way. Child sexual abuse assessed whether anyone ever forced her to have sex or to perform a sexual act or ever touched her sexually when she did not want to. Because it is socially acceptable in Zimbabwe for parents and teachers to beat a child to enforce discipline (Shumba 2001), questions were phrased using the term ‘excessive’ to identify abuse from culturally acceptable disciplinary measures. This also emerged during the pilot study. An experience of either physical and/or sexual or both was coded child abuse.

Respondents were asked whether their first sexual intercourse occurred when they were willing, tricked, persuaded, forced or raped. Our variable forced first sexual intercourse referred to respondents who reported non-consensual first sex.

Respondents’ and partners’ alcohol use during pregnancy and partner’s problem drinking during pregnancy were assessed by asking whether a woman ever had money problems or there were conflicts/violence in the house/with friends or authorities as a result of the partner’s use of alcohol (Dunkle *et al.* 2004).

We adapted concepts from three scales to measure gender equity in relationships (García-Moreno *et al.* 2005; Jewkes *et al.* 2006a,b; Gilbert *et al.* 2007), specifically women’s attitudes towards wife-beating situations (six questions), sexual abuse situations (six) and partner controlling behaviours (six) with unstandardised Cronbach’s alpha for the three scales of 0.75, 0.69 and 0.60, respectively. The sexual abuse scale was dichotomised with zero representing endorsement of two or less sexual abuse attitudes, whilst one represented more than two sexual abuse attitudes. A three-level variable (none, 1–2 attitudes/behaviours and 3–6 attitudes/behaviours) was created for both wife-beating and controlling behaviours to measure the relative importance of fewer and more negative attitudes/behaviours on violence experiences whilst compared to none (Dunkle *et al.* 2004).

Reproductive health- and pregnancy-related questions comprised: women’s lifetime contraception use; number

of pregnancies in lifetime; age at first pregnancy; women and partners’ willingness and decision-making to become pregnant (recent pregnancy) and use of antenatal care services during recent pregnancy.

**Sexual risk practices**

We sought and obtained respondents’ informed written consent to access their HIV test results from the antenatal clinic. HIV status was collected. The results were based on HIV diagnostic tests conducted at the clinics during antenatal care. The clinics used the Determine™ rapid test with positive results confirmed using Capillus, and the Western blot used to resolve any conflicts. We also asked respondents whether their partners knew their (own) HIV status.

We measured HIV risk practices using questions drawn from the Sexual Risk Behaviour Questionnaire tested in the United States (Gilbert *et al.* 2007) and repeated in South Africa (Dunkle *et al.* 2004; Jewkes *et al.* 2006a): ever treated for STI during most recent pregnancy; ever engaging in anal sex; ever having sex with partners who inject drugs; if partner ever had an STI and respondents’ ever engagement in transactional sex for material gain.

**Ethics**

The study followed the WHO guidelines for researching violence against women and girls. Ethical clearance was received from the Medical Research Council of Zimbabwe and the University of the Western Cape.

**Data analysis**

After data had been entered, a random 10% sample was checked for validation and minor discrepancies which did not require re-entry of all data set were fixed. Data were cleaned and prepared for analysis in Stata version 11 (StataCorp 2009). Prevalence using percentages and confidence intervals (CIs) of emotional, sexual and physical violence during pregnancy as well as prevalence of combined forms of violence such as physical and/or sexual violence and physical, sexual and/or emotional violence during pregnancy were calculated. Lifetime experiences and frequency of violence were calculated. Socio-demographic, behavioural, reproductive health and HIV risk characteristics of women and those of their partners were described by experience of violence during pregnancy using chi-square tests to determine differences between the groups. We summarised continuous variables using standard deviations. Our primary analysis was to determine factors associated with physical and/or sexual IPV

S. Shamu *et al.* Intimate partner violence during pregnancy

and severe physical and/or sexual IPV during pregnancy, and an exploratory analysis at univariate level was performed to identify factors for the building of the multivariate models. A multivariate logistic regression model was developed with candidate variables grouped into four clusters, and the model was built first with the demographic factors at the base adding the behavioural factors followed by the pregnancy factors and lastly adding the HIV-related factors.

We developed two models: one to determine factors associated with ever experiencing physical and/or sexual violence during recent pregnancy (*vs.* no violence) and a second to determine the factors associated with severe physical and/or sexual violence during recent pregnancy defined as experiencing six or more episodes of physical and/or sexual violence during pregnancy (*vs.* five or fewer episodes).

We adjusted the models for known covariates, that is, those that could influence experience of violence (age, education, past violence, interviewer effects and time of interview) and tested for interactions. We used backward stepwise regression analysis by first fitting all candidate variables at each stage (e.g. fitting all socio-demographic variables in the first stage) and removing variables that were not significant at the 5% level, starting with one with the highest *P*-value until a best fitted model was achieved with the remaining significant variables.

## Results

We approached 2101 women. 25 refused to participate, six were ill or incapacitated, and a further 28 incomplete questionnaires were removed from the analysis, giving a response rate of 97.1%. This analysis is based on the remaining 2042 women, of which 1156 (56.6%) were interviewed when attending the clinic on the tenth day after giving birth. 886 (43.4%) women were interviewed on their sixth week post-natal clinic visit. Respondents' age ranged from 15 to 48 years with a mean of 26 years [standard deviation (SD) 5.71 years]; their partners' mean age was 31.3 (SD: 6.49 years; range 18–68 years). Table 2 shows participants' socio-demographic characteristics. More than nine in ten had at least 11 years of formal education. More than a third (35%) had been pregnant only once; more than half (53.4%) had a pregnancy before the age of 20.

Table 1 shows the prevalence of the various forms of violence measured. Overall, 63.1% reported physical, sexual and/or emotional violence. 44% women reported emotional abuse, 38.9% sexual violence and 15.9% physical violence during recent pregnancy. Nearly half (46.2%) reported physical and/or sexual violence. Nearly

**Table 1** Prevalence and 95% confidence intervals of various forms of violence (*N* = 2042)

| Violence during pregnancy                                    | <i>n/N</i> | % (95% confidence interval) |
|--|------------|-----------------------------|
| Emotional violence   | 898/2042   | 44.0 (41.8–46.1)            |
| Physical violence  | 325/2042   | 15.9 (14.3–17.5)            |
| Sexual violence  | 794/2042   | 38.9 (36.8–41.0)            |
| Physical and/or sexual violence                              | 943/2042   | 46.2 (44.0–48.3)            |
| Physical, emotional and/or sexual violence                   | 1289/2042  | 63.1 (61.0–65.2)            |
| High-frequency physical violence (3+ episodes)               | 134/2042   | 6.6 (5.5–7.6)               |
| High-frequency (3+) sexual violence                          | 617/2042   | 30.2 (28.2–32.2)            |
| High-frequency (3+) physical and/or sexual violence          | 694/2042   | 34.0 (31.9–36.0)            |
| High-frequency (6+ episodes) physical and/or sexual violence | 207/2042   | 10.1 (8.8–11.4)             |
| Past emotional violence                                      | 822/2042   | 40.3 (38.1–42.3)            |
| Past physical violence                                       | 435/2042   | 21.3 (19.5–23.1)            |
| Past sexual violence   | 737/2042   | 35.6 (33.5–37.7)            |
| Past physical and/or sexual violence                         | 945/2042   | 46.3 (44.1–48.4)            |
| Past physical, sexual and/or emotional violence              | 1253/2042  | 61.3 (59.2–63.4)            |
| Lifetime emotional violence                                  | 1311/2042  | 64.2 (62.1–66.2)            |
| Lifetime physical violence                                   | 762/2042   | 37.3 (35.2–39.4)            |
| Lifetime sexual violence                                     | 1054/2042  | 51.6 (49.4–53.8)            |
| Lifetime physical and/or sexual violence                     | 1327/2042  | 65.0 (62.9–67.1)            |
| Lifetime physical, sexual and/or emotional violence          | 1625/2042  | 79.6 (77.8–81.3)            |
| Use of force at first sexual intercourse                     | 315/2036   | 15.5 (13.9–17.0)            |

a third of the women (30.2%) reported severe sexual violence (three or more episodes), whilst one in ten (10.1%) reported six or more episodes of physical and/or sexual violence during pregnancy. The range of IPV episodes during pregnancy ranged from 0 to 22. Nearly one in two women (46.3%) reported physical and/or sexual abuse during the 12 months before pregnancy, and 15.5% reported their first sexual intercourse as forced/raped. Two-thirds (65%) of the women had ever experienced physical and/or sexual IPV.

Table 2 shows significant differences found for partner variables with more violence reported if partners were younger, more educated, had other wives, had not paid a bride price and if they did not live with relatives. Significant differences were found for all variables on past

S. Shamu *et al.* Intimate partner violence during pregnancy**Table 2** Frequency for socio-demographic variables for women reporting violence during pregnancy and those not reporting violence during pregnancy ( $N = 2042$ )

| Variable   | Total (%)   | No physical/sexual violence reported |       | Physical/sexual violence reported |       | P-value |
|--|-------------|--------------------------------------|-------|-----------------------------------|-------|---------|
|  |             | <i>n</i>                             | %     | <i>n</i>                          | %     |         |
| Woman's age ( $n = 2038$ )                                 |             |                                      |       |                                   |       |         |
| 15–24 years  | 909 (44.6)  | 462                                  | 42.11 | 447                               | 47.50 | 0.01    |
| 25–49 years  | 1129 (55.4) | 635                                  | 57.89 | 494                               | 52.50 |         |
| Marital status ( $n = 2041$ )                              |             |                                      |       |                                   |       |         |
| Married  | 1800 (88.2) | 985                                  | 89.71 | 815                               | 86.43 | 0.02    |
| Not married  | 241 (11.8)  | 113                                  | 10.29 | 128                               | 13.57 |         |
| Woman's education ( $n = 2037$ )                           |             |                                      |       |                                   |       |         |
| Primary  | 148 (7.3)   | 69                                   | 6.30  | 79                                | 8.39  | 0.07    |
| Secondary and tertiary                                     | 1889 (92.7) | 1026                                 | 93.70 | 863                               | 91.61 |         |
| Woman's employment status ( $n = 2027$ )                   |             |                                      |       |                                   |       |         |
| Employed   | 606 (29.9)  | 330                                  | 30.28 | 276                               | 29.46 | 0.68    |
| Unemployed   | 1421 (70.1) | 760                                  | 69.72 | 661                               | 70.54 |         |
| Partner's age ( $n = 2034$ )                               |             |                                      |       |                                   |       |         |
| 18–29 years  | 929 (45.7)  | 462                                  | 42.23 | 467                               | 49.68 | 0.001   |
| Over 30 years  | 1105 (54.3) | 632                                  | 57.77 | 473                               | 50.32 |         |
| Partner's education ( $n = 2022$ )                         |             |                                      |       |                                   |       |         |
| Up to secondary  | 1734 (85.8) | 955                                  | 87.94 | 779                               | 83.23 | 0.003   |
| Tertiary   | 288 (14.2)  | 131                                  | 12.06 | 157                               | 16.77 |         |
| Partner has other wives ( $n = 1982$ )                     |             |                                      |       |                                   |       |         |
| Yes  | 316 (15.9)  | 151                                  | 14.01 | 165                               | 18.25 | 0.01    |
| No   | 1666 (84.1) | 927                                  | 85.99 | 739                               | 81.75 |         |
| Brideprice payment ( $n = 1984$ )                          |             |                                      |       |                                   |       |         |
| All  | 190 (9.6)   | 130                                  | 12.12 | 60                                | 6.60  | <0.0001 |
| Partly   | 1413 (71.3) | 764                                  | 71.20 | 649                               | 71.40 |         |
| Nothing  | 379 (19.1)  | 179                                  | 16.68 | 200                               | 22.00 |         |
| Couple lived with partner's parent/relative ( $n = 1985$ ) |             |                                      |       |                                   |       |         |
| Yes  | 1305 (65.7) | 744                                  | 69.02 | 561                               | 61.85 | 0.001   |
| No   | 680 (34.3)  | 334                                  | 30.98 | 346                               | 38.15 |         |

violence, gender equity and alcohol abuse during pregnancy (Table 3) except for the women's sexual abuse attitudes ( $P = 0.062$ ). Among the pregnancy-related factors (Table 4), more violence was reported if either the woman or her partner independently decided to become pregnant ( $P < 0.0001$ ), if women were unwilling to become pregnant ( $P < 0.0001$ ) and if partners prevented women from using contraception or visiting antenatal care ( $P < 0.0001$ ). More violence was reported by respondents who reported having more than three lifetime sexual partners ( $P = 0.028$ ), were treated for STI during the recent pregnancy ( $P < 0.0001$ ), ever had transactional sex ( $P < 0.0001$ ), were HIV positive ( $P = 0.64$ ), had partners who tested STI positive and did not know their HIV status ( $P < 0.0001$ ).

Table 5 shows the factors associated with both physical and/or sexual violence and severe physical and/or sexual violence during pregnancy. The only socio-demographic variable associated with physical and/or

sexual violence was having a partner younger than 30 years, whilst having a partner with more than one wife was associated with severe violence. There were similarities with the behavioural factors associated with both levels of violence experienced, which included forced first sexual intercourse, women's use of alcohol during pregnancy, experiencing three or more partner controlling behaviours, reporting that a partner fought with another man, quarrelling with partner and having been injured by a partner. Severe violence during pregnancy was also associated with partner's problem drinking and women endorsing three or more wife-beating attitudes, whilst physical and/or sexual violence was also associated with child abuse and women endorsing three or more sexual abuse attitudes.

More reproductive health and pregnancy-related factors were associated with physical and/or sexual violence but not severe violence during the pregnancy. Younger age at first pregnancy, woman and partner independently

**Table 3** Frequency for behavioural variables for women reporting violence during pregnancy and those not reporting violence during pregnancy

| Variable   | Total (%)   | No physical/sexual violence reported |       | Physical/sexual violence reported |       | P-value |
|--|-------------|--------------------------------------|-------|-----------------------------------|-------|---------|
|  |             | <i>n</i>                             | %     | <i>n</i>                          | %     |         |
| Wife-beating attitudes endorsed ( <i>n</i> = 1980)                               |             |                                      |       |                                   |       |         |
| 0–2 attitudes  | 1767 (89.2) | 971                                  | 91.09 | 796                               | 87.09 | 0.004   |
| 3–6 attitudes  | 213 (10.8)  | 95                                   | 8.91  | 118                               | 12.91 |         |
| Sexual abuse attitudes endorsed ( <i>n</i> = 1877)                               |             |                                      |       |                                   |       |         |
| 0–2 attitudes  | 1250 (66.6) | 312                                  | 68.52 | 315                               | 64.45 | 0.062   |
| 3–6 attitudes  | 627 (33.4)  | 679                                  | 31.48 | 571                               | 35.55 |         |
| Experiences of partner's controlling behaviours ( <i>n</i> = 1962)               |             |                                      |       |                                   |       |         |
| No behaviours  | 472 (24.1)  | 309                                  | 29.43 | 163                               | 17.87 | <0.0001 |
| 1–2 behaviours   | 1083 (55.2) | 600                                  | 57.14 | 483                               | 52.96 |         |
| 3–6 behaviours   | 407 (20.7)  | 141                                  | 13.43 | 266                               | 29.17 |         |
| How often do you quarrel? ( <i>n</i> = 2025)                                     |             |                                      |       |                                   |       |         |
| Rarely   | 1466 (72.6) | 844                                  | 78.29 | 622                               | 66.10 | <0.0001 |
| Sometimes  | 466 (23.1)  | 210                                  | 19.48 | 256                               | 27.21 |         |
| Often  | 87 (4.3)    | 24                                   | 2.23  | 63                                | 6.70  |         |
| Child physical and/sexual abuse ( <i>n</i> = 2033)                               |             |                                      |       |                                   |       |         |
| Yes  | 422 (20.8)  | 157                                  | 14.32 | 265                               | 28.28 | <0.0001 |
| No   | 1611 (79.2) | 939                                  | 85.68 | 672                               | 71.72 |         |
| First sexual intercourse ( <i>n</i> = 2036)                                      |             |                                      |       |                                   |       |         |
| Willing  | 1144 (56.2) | 718                                  | 65.57 | 426                               | 45.27 | <0.0001 |
| Persuaded/tricked  | 577 (28.3)  | 265                                  | 24.20 | 312                               | 33.16 |         |
| Forced/raped   | 315 (15.5)  | 112                                  | 10.23 | 203                               | 21.57 |         |
| Ever injured by partner ( <i>n</i> = 2031)                                       |             |                                      |       |                                   |       |         |
| Yes  | 142 (7.0)   | 26                                   | 2.39  | 116                               | 12.33 | <0.0001 |
| No   | 1889 (93.0) | 1064                                 | 97.61 | 825                               | 87.67 |         |
| Abused in past 12 months before pregnancy ( <i>n</i> = 2042)                     |             |                                      |       |                                   |       |         |
| Yes  | 945 (46.3)  | 261                                  | 23.75 | 684                               | 72.53 | <0.0001 |
| No   | 1097 (53.7) | 838                                  | 76.25 | 259                               | 27.47 |         |
| Partner's mother was abused ( <i>n</i> = 2004)                                   |             |                                      |       |                                   |       |         |
| Yes  | 225 (11.23) | 104                                  | 9.67  | 121                               | 13.04 | 0.019   |
| No   | 889 (44.36) | 481                                  | 44.70 | 408                               | 43.97 |         |
| Parents did not live together  | 281 (14.02) | 141                                  | 13.10 | 140                               | 15.09 |         |
| Don't know   | 609 (30.39) | 350                                  | 32.53 | 259                               | 27.91 |         |
| Partner involved in a fight with someone since they partnered ( <i>n</i> = 1908) |             |                                      |       |                                   |       |         |
| Yes  | 336 (17.6)  | 120                                  | 11.88 | 216                               | 24.05 | <0.0001 |
| No   | 1572 (82.4) | 890                                  | 88.12 | 682                               | 75.95 |         |
| Woman used alcohol during pregnancy ( <i>n</i> = 2037)                           |             |                                      |       |                                   |       |         |
| Yes  | 139 (6.8)   | 52                                   | 4.75  | 87                                | 9.24  | <0.0001 |
| No   | 1898 (93.2) | 1043                                 | 95.25 | 855                               | 90.76 |         |
| Partner's problem drinking during pregnancy ( <i>n</i> = 2042)                   |             |                                      |       |                                   |       |         |
| Yes  | 388 (19.0)  | 141                                  | 12.83 | 247                               | 26.19 | <0.0001 |
| No   | 1654 (81.0) | 958                                  | 87.17 | 696                               | 73.81 |         |

wanting the pregnancy and women's decision to become pregnant were associated with physical and/or sexual abuse. The only pregnancy and reproductive health-related factors associated with severe violence were partners preventing women from using contraception and attending antenatal care. HIV-related risk factors were only associated with severe violence (*vs.* less severe violence) and the only significant factor was partner's

knowledge of his HIV status, which was associated with lower likelihood of severe abuse.

### Discussion

This is the first Zimbabwean study with a focus on IPV during pregnancy. The only two previous studies on prevalence of IPV during pregnancy were conducted in 1998 measur-

S. Shamu *et al.* Intimate partner violence during pregnancy**Table 4** Frequency of reproductive, pregnancy and HIV-related variables for women reporting violence during pregnancy and those not reporting violence during pregnancy

| Variable  | Total (%)   | No physical/sexual violence reported |       | Physical/sexual violence reported |       | P-value |
|---|-------------|--------------------------------------|-------|-----------------------------------|-------|---------|
|   |             | <i>n</i>                             | %     | <i>n</i>                          | %     |         |
| Age at first pregnancy ( <i>n</i> = 2038)                               |             |                                      |       |                                   |       |         |
| Up to 19 years  | 950 (46.6)  | 493                                  | 44.90 | 457                               | 48.62 | 0.094   |
| 20+ years   | 1088 (53.4) | 605                                  | 55.10 | 483                               | 51.38 |         |
| No. of lifetime pregnancies ( <i>n</i> = 2042)                          |             |                                      |       |                                   |       |         |
| 1–2 pregnancies   | 720 (35.3)  | 397                                  | 36.12 | 323                               | 34.25 | 0.37    |
| 3–8 pregnancies   | 1322 (64.7) | 702                                  | 63.88 | 620                               | 65.75 |         |
| Planning of most recent pregnancy ( <i>n</i> = 2036)                    |             |                                      |       |                                   |       |         |
| Planned together  | 830 (40.8)  | 493                                  | 45.02 | 337                               | 35.81 | <0.0001 |
| Woman's decision  | 157 (7.7)   | 76                                   | 6.94  | 81                                | 8.61  |         |
| Partner's decision  | 488 (23.9)  | 240                                  | 21.92 | 248                               | 26.35 |         |
| Unplanned pregnancy   | 561 (27.6)  | 286                                  | 26.12 | 275                               | 29.22 |         |
| Woman wanted to become pregnant ( <i>n</i> = 1994)                      |             |                                      |       |                                   |       |         |
| Yes   | 1382 (67.8) | 788                                  | 71.83 | 594                               | 63.06 | <0.0001 |
| No  | 657 (32.2)  | 309                                  | 28.17 | 348                               | 36.94 |         |
| Partner wanted woman to become pregnant ( <i>n</i> = 1967)              |             |                                      |       |                                   |       |         |
| Yes   | 1553 (76.5) | 851                                  | 78.00 | 702                               | 74.76 | 0.086   |
| No  | 477 (23.5)  | 240                                  | 22.00 | 237                               | 25.24 |         |
| Partner prevented woman from using contraception ( <i>n</i> = 2032)     |             |                                      |       |                                   |       |         |
| Yes   | 128 (6.3)   | 35                                   | 3.19  | 93                                | 9.94  | <0.0001 |
| No  | 1904 (93.7) | 1061                                 | 96.81 | 843                               | 90.06 |         |
| Partner prevented woman from visiting antenatal care ( <i>n</i> = 2021) |             |                                      |       |                                   |       |         |
| Yes   | 39 (1.9)    | 14                                   | 1.29  | 25                                | 2.68  | <0.0001 |
| No  | 1737 (86.0) | 971                                  | 89.33 | 766                               | 82.01 |         |
| Partner had no interest   | 245 (12.1)  | 102                                  | 9.38  | 143                               | 15.31 |         |
| HIV status ( <i>n</i> = 2042)   |             |                                      |       |                                   |       |         |
| Positive  | 299 (14.6)  | 156                                  | 14.19 | 143                               | 15.16 | 0.64    |
| Negative  | 1652 (80.9) | 897                                  | 81.62 | 755                               | 80.06 |         |
| Unknown/not tested  | 91 (4.5)    | 46                                   | 4.19  | 45                                | 4.77  |         |
| Total lifetime sexual partners ( <i>n</i> = 2038)                       |             |                                      |       |                                   |       |         |
| 1–2 partners  | 1920 (94.2) | 1046                                 | 95.26 | 874                               | 92.98 | 0.028   |
| 3+ partners   | 118 (5.8)   | 52                                   | 4.74  | 66                                | 7.02  |         |
| Treated for STI during pregnancy ( <i>n</i> = 2031)                     |             |                                      |       |                                   |       |         |
| Yes   | 131 (6.5)   | 51                                   | 4.67  | 80                                | 8.53  | <0.0001 |
| No  | 1900 (93.5) | 1042                                 | 95.33 | 858                               | 91.47 |         |
| Transactional sex ( <i>n</i> = 2036)                                    |             |                                      |       |                                   |       |         |
| Yes   | 318 (15.6)  | 131                                  | 11.94 | 187                               | 19.91 | <0.0001 |
| No  | 1718 (84.4) | 966                                  | 88.06 | 752                               | 80.09 |         |
| Partner ever treated for STI ( <i>n</i> = 2030)                         |             |                                      |       |                                   |       |         |
| Yes   | 120 (5.9)   | 45                                   | 4.12  | 75                                | 8.00  | <0.0001 |
| No  | 1834 (90.3) | 1016                                 | 92.96 | 818                               | 87.30 |         |
| Don't know  | 76 (3.7)    | 32                                   | 2.93  | 44                                | 4.70  |         |
| Ever had a partner who injects drugs ( <i>n</i> = 2013)                 |             |                                      |       |                                   |       |         |
| Yes   | 36 (1.8)    | 14                                   | 1.29  | 22                                | 2.38  | 0.066   |
| No  | 1977 (98.2) | 1074                                 | 98.71 | 903                               | 97.62 |         |
| Partner knows own HIV status ( <i>n</i> = 2029)                         |             |                                      |       |                                   |       |         |
| Yes   | 1174 (57.9) | 686                                  | 62.88 | 488                               | 52.03 | <0.0001 |
| No  | 723 (35.6)  | 341                                  | 31.26 | 382                               | 40.72 |         |
| Don't know  | 132 (6.5)   | 64                                   | 5.87  | 68                                | 7.25  |         |





S. Shamu *et al.* Intimate partner violence during pregnancy

**Table 5** (continued)

| Variable   | Physical and/or sexual violence during pregnancy |      |         |      |         |      | Severe physical and/or sexual violence during pregnancy |      |         |      |         |      |         |      |      |
|--|--|------|---------|------|---------|------|---|------|---------|------|---------|------|---------|------|------|
|  | Stage 1  |      | Stage 2 |      | Stage 3 |      | Stage 1   |      | Stage 2 |      | Stage 3 |      | Stage 4 |      |      |
|  | AOR  | LCI  | UCI     | AOR  | LCI     | UCI  | AOR   | LCI  | UCI     | AOR  | LCI     | UCI  | AOR     | LCI  | UCI  |
| Endorsing 3–6 sexual abuse attitudes ( <i>vs.</i> 0–2 attitudes) | 1.32   | 1.03 | 1.69    | 1.32 | 1.03    | 1.7  |   |      |         |      |         |      |         |      |      |
| Endorsing 1–2 wife-beating attitudes ( <i>vs.</i> non-attitudes) |  |      |         |      |         |      | 1.25  | 0.84 | 1.88    | 1.24 | 0.82    | 1.86 | 1.19    | 0.79 | 1.80 |
| Endorsing 3–6 wife-beating attitudes                             |  |      |         |      |         |      | 1.79  | 1.00 | 3.18    | 1.83 | 1.02    | 3.28 | 1.84    | 1.02 | 3.31 |
| Experiencing 1–2 controlling behaviours ( <i>vs.</i> none)       | 1.23   | 0.92 | 1.63    | 1.25 | 0.94    | 1.67 | 1.44  | 0.82 | 2.55    | 1.40 | 0.79    | 2.46 | 1.41    | 0.79 | 2.50 |
| Experiencing 3–6 controlling behaviours ( <i>vs.</i> none)       | 1.71   | 1.19 | 2.44    | 1.78 | 1.24    | 2.55 | 1.96  | 1.07 | 3.59    | 1.83 | 1.00    | 3.37 | 1.84    | 1.00 | 3.38 |
| Quarrel sometimes ( <i>vs.</i> rarely)                           | 1.47   | 1.12 | 1.94    | 1.48 | 1.12    | 1.95 | 1.81  | 1.21 | 2.73    | 1.81 | 1.20    | 2.74 | 1.84    | 1.21 | 2.80 |
| Quarrel often ( <i>vs.</i> rarely)                               | 1.63   | 0.82 | 3.23    | 1.56 | 0.79    | 3.10 | 5.60  | 2.88 | 10.89   | 4.68 | 2.34    | 9.37 | 4.56    | 2.27 | 9.16 |
| Partner ever fought with another man ( <i>vs.</i> no fighting)   | 1.67   | 1.21 | 2.3     | 1.73 | 1.25    | 2.40 | 1.84  | 1.21 | 2.80    | 1.78 | 1.17    | 2.72 | 1.76    | 1.15 | 2.69 |
| Woman ever injured by partner ( <i>vs.</i> not injured)          | 2.69   | 1.57 | 4.62    | 2.80 | 1.62    | 4.82 | 3.68  | 2.26 | 6.01    | 3.33 | 2.01    | 5.51 | 3.26    | 1.97 | 5.39 |

**Table 5** (continued)

| Variable   | Physical and/or sexual violence during pregnancy |     |         |     |         |     | Severe physical and/or sexual violence during pregnancy |      |         |     |         |     |         |      |      |      |      |      |      |      |      |
|--|--|-----|---------|-----|---------|-----|---|------|---------|-----|---------|-----|---------|------|------|------|------|------|------|------|------|
|  | Stage 1  |     | Stage 2 |     | Stage 3 |     | Stage 1   |      | Stage 2 |     | Stage 3 |     | Stage 4 |      |      |      |      |      |      |      |      |
|  | AOR  | LCI | UCI     | AOR | LCI     | UCI | AOR   | LCI  | UCI     | AOR | LCI     | UCI | AOR     | LCI  | UCI  |      |      |      |      |      |      |
| Pregnancy-related factors  |  |     |         |     |         |     |   |      |         |     |         |     |         |      |      |      |      |      |      |      |      |
| Woman wanted to get pregnant ( <i>vs.</i> not willing)               |  |     |         |     |         |     | 1.46  | 1.01 | 2.11    |     |         |     |         |      |      |      |      |      |      |      |      |
| Partner wanted her to get pregnant ( <i>vs.</i> partner not willing) |  |     |         |     |         |     | 0.64  | 0.42 | 0.99    |     |         |     |         |      |      |      |      |      |      |      |      |
| Planning of most recent pregnancy: both                              |  |     |         |     |         |     |   |      |         |     |         |     |         |      |      |      |      |      |      |      |      |
| Partner only decided   |  |     |         |     |         |     |   |      |         |     |         |     |         |      |      |      |      |      |      |      |      |
| Woman only decided   |  |     |         |     |         |     |   |      |         |     |         |     |         |      |      |      |      |      |      |      |      |
| Unplanned pregnancy  |  |     |         |     |         |     | 1.02  | 0.73 | 1.43    |     |         |     |         |      |      |      |      |      |      |      |      |
| Less than 20 years at first pregnancy ( <i>vs.</i> 20+ years)        |  |     |         |     |         |     | 1.73  | 1.06 | 2.84    |     |         |     |         |      |      |      |      |      |      |      |      |
| Partner prevented woman from using contraception                     |  |     |         |     |         |     | 0.91  | 0.61 | 1.34    |     |         |     |         |      |      |      |      |      |      |      |      |
| Partner prevented woman from visiting antenatal care                 |  |     |         |     |         |     | 0.77  | 0.60 | 0.98    |     |         |     |         |      |      |      |      |      |      |      |      |
|  |  |     |         |     |         |     |   |      |         |     |         |     | 1.84    | 1.02 | 3.29 | 1.83 | 1.02 | 3.30 |      |      |      |
|  |  |     |         |     |         |     |   |      |         |     |         |     |         |      |      | 3.05 | 1.08 | 8.62 | 3.13 | 1.11 | 8.82 |

S. Shamu *et al.* Intimate partner violence during pregnancy

Table 5 (continued)

| Variable   | Physical and/or sexual violence during pregnancy |     |         |     |         |     | Severe physical and/or sexual violence during pregnancy |     |         |     |         |     |         |     |     |      |      |      |
|--|--|-----|---------|-----|---------|-----|---|-----|---------|-----|---------|-----|---------|-----|-----|------|------|------|
|  | Stage 1  |     | Stage 2 |     | Stage 3 |     | Stage 1   |     | Stage 2 |     | Stage 3 |     | Stage 4 |     |     |      |      |      |
|  | AOR  | LCI | UCI     | AOR | LCI     | UCI | AOR   | LCI | UCI     | AOR | LCI     | UCI | AOR     | LCI | UCI |      |      |      |
| HIV risk factors<br>Partner knows<br>own HIV<br>status ( <i>vs.</i><br>partner does<br>not know) |  |     |         |     |         |     |   |     |         |     |         |     |         |     |     | 0.62 | 0.42 | 0.93 |

AOR, adjusted odds ratio; LCI, lower confidence interval; UCI, upper confidence interval.  
N = 2042.

ing violence in one region (Watts *et al.* 1998) and in 2005 when the violence module was added to the DHS (CSO and Macro 2007). Although direct comparisons cannot be made due to different study designs, these studies reported only physical IPV during pregnancy that was 8.3% (CSO and Macro 2007) and 9.9% (Watts *et al.* 1998), which are considerably lower than what we found (15.9%). Similarly, our study reported a prevalence of physical and/or sexual violence of 46.2%, which is much higher than 13.5% reported in a review based on data from 19 DHS and International Violence Against Women Surveys (Devries *et al.* 2010).

The higher rates reported could be because our study was clinic based, using a different sample from population studies, but more importantly, we referred to the most recent pregnancy, and interviews were conducted within 10 days to 6 weeks of giving birth, which potentially reduces recall bias. Previous studies in Zimbabwe measured violence in any pregnancy a woman ever had (Watts *et al.* 1998; CSO & Macro 2007). A similar difference between an antenatal-based study and a DHS in South Africa despite them having identical questions has been reported (Dunkle *et al.* 2004). The antenatal health setting in our study may also have allowed greater disclosure of violence compared to the home where the perpetrator may hinder disclosure (Covington *et al.* 2002; Dunkle *et al.* 2004; Alhabib *et al.* 2010). Much lower prevalence was also reported in a global review with between 1.3% and 12.6% of physical, sexual and/or emotional violence during pregnancy but up to 36% were reported in developing countries (Taillieu & Brownridge 2010) compared to our estimate of 63%. Very high gender inequalities reported in this study could be influencing higher IPV rates.

The higher prevalence of IPV reported in our study could have been due to this study measuring IPV that took place in the entire pregnancy period. Most other studies collected data in the 1st or 2nd trimester (Leung *et al.* 1999; Johnson *et al.* 2003; Fawole *et al.* 2008). The importance of including the full period of pregnancy was demonstrated to us during the formative qualitative study when reports of sexual and emotional violence during the third trimester were very prominent in women's accounts of their experiences (Shamu *et al.* 2012).

The measurements of past IPV (12 months before pregnancy) allowed us to compare violence in pregnancy and outside pregnancy. We found no difference contrary to studies that reported more past physical and/or sexual violence before pregnancy than during pregnancy (Guo *et al.* 2004). Although physical violence decreased (from 21.3% [95% CI 19.5–23.1] to 15.9% [95% CI 14.3–17.5]), reports of emotional violence (40.3% [95% CI

S. Shamu *et al.* **Intimate partner violence during pregnancy**

38.1–42.3] to 44.0% [95% CI 41.8–46.1]) and sexual violence (35.6% [95% CI 33.5–37.7] to 38.9% [95% CI 36.8–41.0]) suggest increasing though not statistically significant trends; that pregnancy may be associated with increasing non-physical forms of violence. The lower rates of physical violence may be an indication of men reducing this type of abuse during pregnancy because of the value they place on the unborn child whilst forcing sex and emotional abuse are not perceived in the same way. Reasons for increased sexual violence during pregnancy – particularly in the last trimester – were reported in the formative study (Shamu *et al.* 2012), where women reported that men fail to understand the physical and emotional changes pregnancy brings about and wanted frequent sexual intercourse as before the pregnancy, whilst women were less willing to have sex, finding positions more difficult or uncomfortable. Such excuses were often not accepted or understood by their partners resulting in conflict and forced sex. These experiences confirm the continued male dominance, control and entitlement to sex that is still common in many African cultures and have been described as the extension of the transfer of a woman's sexuality rights from her father to a husband through traditional marriage payments (Ansell 2001).

**Socio-demographic and behavioural risk factors**

Although our study was conducted in a poor community where most respondents were unemployed (70%) and economically dependent on their partners who were un/semi-skilled employees, which could have increased their likelihood of experiencing violence, none of the poverty indicators such as low education and unemployment were significantly associated with experiencing IPV during pregnancy. This is inconsistent with findings from studies conducted in similarly less industrialised, less educated and poor communities, which found lower socio-economic status as a risk factor for IPV in Peru (Perales *et al.* 2009), Pakistan (Farid *et al.* 2008) and among poor Black Americans (Shumway *et al.* 1999; Covington *et al.* 2002). The lack of an association with poverty indicators in our study may be a result of the endemic poverty in Zimbabwe and may also reflect the current economic and political crisis. It is also possible that the lack of variability in our measure of poverty resulted in an apparent lack of effect. Our sample reported high levels of formal education, suggesting that current poverty may not reflect multidimensional or lifetime deprivation. The only demographic factor associated with violence during pregnancy was partner's age; younger men were more likely to abuse their partners, which is consistent with findings

from IPV studies conducted in South Africa (Jewkes *et al.* 2002, 2006b). This association between young men and violence may be due to young men lacking experience in handling misunderstandings and conflicts in a marriage.

This study provides evidence on how unequal gender norms promote violence. We found all gender inequity factors (women's sexual abuse attitudes, wife-beating attitudes and partner's controlling behaviours) associated with both forms of IPV that we measured. The finding confirms what has been reported in studies performed with pregnant and non-pregnant women (Jewkes *et al.* 2002, 2006a,b; García-Moreno *et al.* 2005; Clark *et al.* 2009) as well as perpetration studies where men's use of violence against partners was associated with greater gender inequality (Jewkes *et al.* 2011) and partner violence is part of a broader control of women by men (Dunkle *et al.* 2004). IPV could potentially alter gender norms (Jewkes 2010) and ultimately forcing abused women to endorse attitudes towards wife-beating, sexual abuse and controlling behaviours. An intervention to improve relationship communication has been developed and tested with a study in SA among young men and women showing a decrease in IPV (Jewkes *et al.* 2010). Continued development and testing of such interventions are urgently needed.

The explanation of why women under 20 years of age at first pregnancy were less likely to be abused may be further evidence of the role of gender inequality as these women may have learned to be submissive to their partners and may therefore avoid abuse by their compliance. The association between IPV and being in a polygamous relationship was previously reported in Zimbabwe (Nyamayemombe *et al.* 2010), and although this has not been explored and is not fully understood – economic demands of a pregnant wife could increase her vulnerability to violence by a husband. Violence between cowives because of competition for limited resources, including attention of the husband, has been anecdotally reported.

Our results suggest that abuse during pregnancy is not an isolated incident in a woman's life but appears to be part of a lifetime process. The association with abuse before age 15, forced first sexual intercourse and ever being injured has been reported in both IPV during pregnancy studies (Ntaganira *et al.* 2008) and general IPV studies (Jewkes *et al.* 2002) in Africa. Violence prevention interventions should start during childhood because targeting the pregnancy period is too late as women learn to accept violence as a means to punish misbehaviour from childhood (Dunkle *et al.* 2004). The frequency of abuse during pregnancy also indicates that violence is not a once-off event during the pregnancy with one in ten women experiencing more than six events during their

**S. Shamu *et al.* Intimate partner violence during pregnancy**

pregnancy. We do not know of other studies that report frequency of violence during pregnancy. Such persistent violence may have chronic health problems to the woman and negative consequences to the unborn child.

It is a concern that alcohol use during pregnancy by the women and partners was found associated with abuse. This, however, has been reported in many studies of IPV during pregnancy (Dunkle *et al.* 2004; Fawole *et al.* 2008; Ntaganira *et al.* 2008, 2009; Olagbuji *et al.* 2010; Eaton *et al.* 2012). The relationship between IPV and alcohol use is complex because it can be bidirectional with alcohol drinking leading to IPV or IPV leading to alcohol drinking (Bacchus *et al.* 2006; Widom *et al.* 2006) or it may involve both partners (Pallitto & O'Campo 2004).

**Pregnancy-related risk factors**

Many studies in the past decade assessed the association between pregnancy intention or unplanned pregnancy and IPV during pregnancy without defining whose intention it was to become pregnant (Goodwin *et al.* 2000; Pallitto & O'Campo 2004; Silverman *et al.* 2007; Cripe *et al.* 2008; Fanslow *et al.* 2008). In our study, we analysed whose intention (both, woman's, partner's or unintended) it was to become pregnant as well as the willingness for the pregnancy. We found that if a woman decided on her own to become pregnant, she was at greater risk to experience IPV during the pregnancy. We also found that if the partner wanted her to become pregnant, she was protected from experiencing violence. It is possible that being victimised by a partner leads to a pervasive sense of 'everyday violence' that undermines women's self-efficacy, which predisposes them to believe that they themselves desire children when in fact they are simply mirroring their abusive partners' desires or leads to less reproductive control and unintended pregnancy (Tsai & Subramanian 2012). This relation between pregnancy decision-making and violence links to the central role male domination has in women's sexuality and reproductive health issues as discussed earlier. The increase in vulnerability of women may be explained in Zimbabwean economic context where women's decisions to have children are in conflict with men's roles of being providers. Men's traditional role of deciding how many children a couple could have including when to have another pregnancy could be related to the economic hardships facing people in Zimbabwe where men struggled to raise income for family upkeep during the time of study. The link between sexual and reproductive health and poverty has been reported in Zimbabwe in the context of HIV decline (Gregson *et al.* 2006; Hallett *et al.* 2006; Halperin *et al.* 2011) with men limiting their sex-

ual partners as resources to provide for them diminished. Such control of decision-making in Zimbabwean households soon after marriage has been described (Matavire 2012), and the struggle to teach women about their reproductive health rights was recognised more than a decade ago (Njovana & Watts 1996). Abused pregnant women were more likely to report being stopped from using contraception before the pregnancy or prevented from accessing antenatal care, confirming the male domination in decisions of sexual and reproductive health. Similar findings were reported in India (Koski *et al.* 2011), whilst two studies from the US reported several ways in which men exercise control over women's reproductive health (Miller *et al.* 2010; Moore *et al.* 2010). However, further research is needed to help us understand the relationship between violence and reproductive health decision-making including specific factors such as type of contraception use. Continued effort is needed to target men in reproductive health programmes to ensure sharing of reproductive health decisions in programmes such as the low-cost antenatal visit-specific short educational interventions, which was able to reduce women's odds of reporting reproductive coercion by 71% in the USA (Miller *et al.* 2011). Such interventions may be adapted in developing countries such as Zimbabwe to help women with abusive partners.

**HIV and HIV-related risk factors**

No HIV-related factors were found to be associated with both physical and/or sexual violence and severe physical and/or sexual violence except that a decrease in severe violence was associated with women's partners knowing their own HIV status. This finding implies that if men know their status, they would treat their partners better. It might also mean that they had communicated about HIV and testing although our study did not explore this further. The lack of association between violence and HIV infection found in this study is not surprising and is consistent with recent findings from pooled analysis of ten low-middle income countries using DHS data (OR, 1.05; CI 0.90–1.22) as well as an analysis of individual countries data including Zimbabwe (0.97 CI, 0.83–1.15) that found no significant association except for a negative association for Haiti (OR, 0.45; CI 0.23–0.90) (Harling *et al.* 2010). In a similar analysis of risk factors associated with partner violence using DHS data from Zimbabwe, HIV-positive status was not associated with increased odds of experiencing violence (OR, 1.11; CI, 0.91–1.34) (Nyamayemombe *et al.* 2010). Similarly, a study based on DHS population data in Rwanda found that HIV was only associated with severe psychological violence but not

S. Shamu *et al.* **Intimate partner violence during pregnancy**

with physical and/or sexual IPV (Kayibanda *et al.* 2012). Although we cannot directly compare these findings because these studies were not based on IPV during pregnancy and they analysed data from either currently married (Nyamayemombe *et al.* 2010) or ever married (Harling *et al.* 2010) women – excluding single women which our study included – they do provide insight on the general epidemiology and complicatedness of the intersections between IPV and HIV in Zimbabwe and across the globe. The lack of a significant relationship between HIV-related factors and violence or severe violence could also be explained by interactions with variables we did not measure. The high prevalence of IPV and HIV may also make the association difficult to find as the two are commonly present in the population. Also, whilst IPV was experienced during pregnancy, we do not know when women were infected by HIV, and therefore, longitudinal studies are best suited to explore the relationship between IPV and HIV status disclosure.

**Limitations**

The cross-sectional nature of the study limits causal inferences. We could not establish the direction of causality between IPV and unequal gender norms. However, as literature suggests, the bidirectional relationship between IPV and unequal gender norms helps us to understand that intervening at one level can alter the other in a positive way. Although the study was about violence during pregnancy, it is not representative of all pregnant women in Harare because 19.4% pregnant women would not visit the clinic postnatally (Munjanja *et al.* 2009). However, interviewing women post-natally gave us an opportunity to interview women who reported being stopped from visiting prenatal care whom we could have missed if we had done interviews during pregnancy. Although we interviewed women who attended the 10 days postpartum visit – a near representative sample of recently pregnant women – we still missed women who aborted, miscarried or were in other circumstances that prevented them from attending a post-natal clinic.

**Conclusions**

The high rates of IPV during pregnancy among post-natal attendees in this study are among the highest ever reported. The study found IPV to be associated with a range of behavioural and pregnancy-related factors but not associated with HIV infection and most demographic factors. Primary prevention interventions are needed in form of community educational campaigns to change gender inequitable norms, beliefs and practices. Lessons

about changing gender inequitable beliefs can be learnt from successful interventions with both adults (Dunbar *et al.* 2010) and young people (Hallfors *et al.* 2011) in Zimbabwe. Secondary prevention mechanisms by midwives in antenatal and post-natal care settings should address IPV during pregnancy because these are unique opportunities to consistently contact women at risk.

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S. Shamu *et al.* **Intimate partner violence during pregnancy**

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S. Shamu *et al.* Intimate partner violence during pregnancy

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