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Domestic violence during pregnancy and risk of low birthweight and maternal complications: a prospective cohort study at Mulago Hospital, Uganda

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Summary

OBJECTIVES To investigate whether domestic violence during pregnancy is a risk factor for antepartum hospitalization or low birthweight (LBW) delivery.

METHODS A prospective cohort study was conducted in Mulago hospital, Kampala, Uganda, among 612 women recruited in the second pregnancy trimester and followed up to delivery, from May 2004 through July 2005. The exposure (physical, sexual or psychological violence during pregnancy) was assessed using the Abuse Assessment Screen. The relative and attributable risks of LBW and antepartum hospitalization were estimated using multivariate logistic regression analysis.

RESULTS The 169 women [27.7% 95% CI (24.3–31.5%)] who reported domestic violence during pregnancy did not differ significantly from the unexposed regarding sociodemographic characteristics, but differed significantly ($P < 0.05$) regarding domicile variables (had less household decision-making power, more resided in extended families and more had unplanned pregnancy). They delivered babies with a mean birthweight 2647.5 ± 604 g, on average 186 g [(95% CI 76–296); $P = 0.001$] lower than those unexposed. After adjusting for age, parity, number of living children, pregnancy planning, domicile and number of years in marriage, the relative risk (RR) of LBW delivery among women exposed to domestic violence was 3.78 (95% CI 2.86–5.00). Such women had a 37% higher risk of obstetric complications (such as hypertension, premature rupture of membranes and anaemia) that necessitated antepartum hospitalization [RR 1.37 (95% CI 1.01–1.84)].

CONCLUSION In this pregnancy cohort, domestic violence during pregnancy was a risk factor for LBW delivery and antepartum hospitalization.

keywords Domestic violence, pregnancy, low birthweight, antepartum hospitalization, relative and attributable risk, Uganda

Introduction

Domestic violence during pregnancy has been associated with adverse pregnancy outcome ranging from spontaneous abortions, low birthweight (LBW) and premature rupture of membranes (PROM) to preterm labour (McFarlane *et al.* 1992; Curry *et al.* 1998; Cokkinides *et al.* 1999; Janssen *et al.* 2003). Complications of domestic violence may arise directly or indirectly (Cokkinides *et al.* 1999). Directly, a physical or sexual assault involving abdominal trauma can cause abruptio placenta leading to foetal death, abortion, PROM, preterm labour and delivery of a preterm infant (Pearlman *et al.* 1990). Indirectly, adverse outcomes may arise from stress as a consequence of victimization and isolation (Austin & Leander 2000).

Several studies showed a significant association between domestic violence during pregnancy and adverse outcomes such as LBW (Quinlivan & Evans 2001; Valladares *et al.* 2002; Coker *et al.* 2004; Neggers *et al.* 2004) and preterm birth (Shumway *et al.* 1999; Coker *et al.* 2004). In a meta-analysis involving eight studies on domestic violence and LBW, women who reported domestic violence during pregnancy were more likely than non-abused women to deliver a LBW infant (Murphy *et al.* 2001). In contrast, Grimstad *et al.* (1997), in a case–control study, found no significant association after several potential confounders, such as smoking, alcohol intake, drug abuse, age, previous

reproductive history or parity were adjusted for. They suggested that stress rather than domestic violence *per se* could be responsible for birthweight effects. This finding was supported by another study in America (Altarac & Strobino 2002), in which women who reported abuse-related stress had twice higher odds of LBW (95% CI 1.2–3.6), with mean birthweight 236 g lower (95% CI 102–371) than for women with no stress.

Research linking domestic violence to LBW therefore has not been conclusive, was mainly cross-sectional or involved case–control studies with inadequate power. Consequently, how much LBW is attributable to domestic violence during pregnancy remained unknown. Most research was conducted in developed countries (mainly Australia, western Europe or North America) with a few studies from Central or South America, but no such research had been published from Africa. None of the studies had associated domestic violence, LBW and antepartum hospitalization.

In Uganda, the average parity of pregnant women is much higher than that in Europe or Americas (UBS 2001), access to health care is lower and legal protection for survivors is insufficient. Domestic violence is common (UBS 2001; Kaye *et al.* 2002) and has potentially graver consequences for both the mother and foetus. Thus, we sought to investigate the magnitude of both LBW and maternal ill health attributable to domestic violence in a cohort of pregnant women attending antenatal clinic at the national referral hospital in Kampala, Uganda. The objective was to investigate whether this violence is associated with maternal ill health, resulting in hospitalization or eventual delivery of LBW infants (birthweight less than 2500 g). Understanding the relationship between domestic violence and adverse outcomes could have clinical and public health implications, as identification and intervention might reduce adverse outcomes.

Methods

Study design

The study design was a prospective open cohort study conducted in Mulago hospital antenatal clinic and labour ward from May 2004 to July 2005. Participants were recruited among pregnant women attending the clinic at Mulago Hospital in the second trimester and followed up to delivery. Exposure to domestic violence (physical, sexual or psychological) was assessed using an interviewer-administered questionnaire. The primary outcomes were LBW (birthweight less than 2500 g) and antepartum hospitalization. The study inclusion criteria were second trimester gestation, willingness to continue attending antenatal care (and eventually deliver in Mulago hospital) and living within 30 km radius from the hospital. Exclusion criteria included multiple or non-viable gestation, chronic diseases associated with frequent hospitalization (such as cardiac or renal disease) or likely to cause LBW delivery (such as anaemia, renal or sickle-cell disease) disease.

Participants

During the 14-month study period, 700 participants were recruited, of whom 84 (12.0%) were lost to follow-up by the time of delivery, 3 had stillbirths, 1 had multiple gestation and 612 completed the study.

Data collection procedure

Participants were screened and recruited by research assistants who were midwives in the antenatal clinic. They were allotted individual study numbers and subsequently interviewed using an interviewer-administered questionnaire. The gestation age was established from the last normal menstrual period, clinical examination and ultrasound scan (confirmed by repeat scan for scans performed initially in the first trimester). At the time of delivery, different research assistants re-interviewed them using a similar questionnaire that included questions on foetal outcomes.

Study variables

Data were collected on potentially confounding sociodemographic variables such as age, education level, marital status (single *vs.* ever-married), number of years in marriage, age and education level of spouse, employment status of participant and spouse, social habits (drinking alcohol or smoking) and domicile (nuclear *vs.* extended, rural *vs.* peri-urban). For household decision-making power, a Likert scale (with levels never, rarely, sometimes and always) was used to assess three domains namely, freedom of movement, health care seeking and making household purchases. Reproductive history (parity, number of living children, nature of antecedent pregnancy and contraceptive ever use) was also assessed. For pregnancy intention, women's subjective feelings regarding the pregnancy from conception to evaluation (whether the woman wanted to be pregnant then, sooner or later) were assessed. Domestic violence (physical, sexual or psychological) during pregnancy and previous year was elicited using the Abuse Assessment Screen (McFarlane *et al.* 1992). The severity of violence was assessed using the Severity of Violence Against Women (SVAW) Scale (Marshall 1992) and was coded as mild violence (symbolic violence, threats

of injury or hitting restricted extremities), moderate (cuts, punching on face or rest of the body) and severe (battering with wounding, fractures or burns including use of a weapon). As a potential confounder, human immunodeficiency virus (HIV) was evaluated.

The pregnancy cohort was followed until delivery to assess pregnancy-related complications (notably hypertension, PROM, haemorrhage, preterm labour, febrile illnesses and antepartum hospitalization) and non-pregnancy-related conditions. Foetal outcomes were assessed by mode of delivery, birthweight and maturity status grade (preterm, term or small-for-gestation-age). Multiple and stillbirths were excluded from analysis.

Sample size

With 80% power at 95% significance level, a 2:1 ratio of unexposed (those reporting no domestic violence) to exposed (those reporting domestic violence), assuming a prevalence of LBW in the general population of 10% and doubled risk in women exposed to domestic violence during pregnancy, the minimum sample size was estimated at 474 (316 unexposed and 158 exposed).

Data analysis

Data were analysed using the Statistical Package for Social Sciences (SPSS, version 10.1, 2002, Chicago, USA) and STATA software (Release 8, 2003, Stata Corporation, College Station, TX, USA). Using SPSS, baseline characteristics of exposed and non-exposed participants were compared using Pearson's chi-square test for categorical data and Student's *t*-test for numerical data. On bivariate analysis, maternal and foetal complications of exposed and non-exposed participants were compared using relative risk (RR) and 95% confidence intervals (95% CI). Using STATA, stepwise binary logistic regression, general linear modelling and Poisson regression (Yaffee 2001; McNutt *et al.* 2003; Zou 2004) were performed to assess the risk of domestic violence for LBW and antepartum hospitalization while adjusting for confounding and interaction.

During modelling for regression analyses, all variables of clinical importance or with a *P*-value of 0.2 and less on bivariate analysis were considered for inclusion. Domestic violence was entered as present = 1, absent = 0. Marital status was entered as single *vs.* ever-married (single = 0, married = 1), while age, parity, number of living children, number of years in marriage and age of spouse were entered as numerical variables. HIV status was evaluated as HIV positive *vs.* HIV negative (1 = HIV positive and 0 = HIV negative). Domicile was entered as rural *vs.* urban (rural = 0, urban = 1). Severity of violence was coded as mild or symbolic *vs.* moderate or severe (mild or symbolic = 0, moderate or severe = 1). Pregnancy intention variables (pregnancy planning and timing) were entered as yes = 0, no = 1. Household decision-making power variables were coded as 1 (sometimes or always) *vs.* 0 (never or rarely). The goodness-of-fit model of the final logistic regression models was assessed by Pearson's chi-square test.

Ethical considerations

Ethical clearance was obtained from Mulago hospital, the Department of Obstetrics and Gynaecology and Faculty of Medicine of Makerere University, from Mulago National Referral Hospital, from Uganda National Council of Science and Technology as well as from the ethics committee of Karolinska Institutet, Stockholm, Sweden. Counselling about domestic violence was provided to all the subjects and survivors were referred to specialized centres for further support.

Results

One hundred and sixty-nine women (27.7%, 24.3–31.5) had experienced violence which was sexual (2.7%), physical (27.8%) or psychological (24.8%). Twelve women in the exposed group (6.1%) and 27 in the non-exposed group (6.4%) were HIV-positive. Regarding severity of violence on the SVAW Scale, 30 participants (18.2%) presented with mild violence while the remainder presented with moderate or severe violence. Sexual violence and psychological violence were reported by the same women reporting physical violence. The incidence of LBW delivery and antepartum hospitalization was 37.1% and 35.6%, respectively.

Regarding sociodemographic characteristics, there was no statistically significant difference between exposed and non-exposed participants in the study. There was no significant difference whether domicile was rural or peri-urban/urban. Table 1 shows the exposed and non-exposed participants compared by pregnancy intention, household decision-making and domicile. Women exposed to domestic violence were more likely to reside in nuclear rather than extended families ($P = 0.007$). Regarding household decision-making, the exposed differed significantly from the unexposed by reporting less freedom of movement ($P = 0.009$) and less freedom to attend village meetings without spouse's prior permission (sometimes or always *vs.* never or rarely; $P = 0.021$). Regarding the ability to purchase small items like food or large items like furniture or the ability to take a sick relative to hospital, the two groups did not differ significantly. Significantly,

Table 1 Pregnancy intention, contraceptive use, household decision-making and domicile of study subjects at recruitment in relation to violence during pregnancy

Characteristic	Domestic violence during pregnancy ($n = 169$), n (%)	No domestic violence during pregnancy ($n = 443$), n (%)	Odds ratio (95% CI)
Nature of domicile			
Nuclear	92 (54.4)	293 (66.1)	0.70 (0.55–0.91)
Extended	77 (45.6)	150 (33.9)	
Freedom of movement ($n = 439$)			
Never or rarely	69 (52.6)	214 (48.7)	1.13 (0.84–1.53)
Sometimes or always	62 (47.3)	225 (51.3)	
Freedom to attend village meetings ($n = 441$)			
Never or rarely	73 (55.7)	216 (69.9)	0.25 (0.21–0.31)
Sometimes or always	58 (44.3)	93 (30.1)	
Buying small items like food in the home ($n = 442$)			
Never or rarely	59 (44.7)	156 (50.3)	0.85 (0.64–1.14)
Sometimes or always	73 (55.3)	154 (49.6)	
Pregnancy timing was right			
Yes	92 (54.4)	292 (65.9)	0.24 (0.20–0.29)
No	77 (45.6)	151 (34.1)	
Pregnancy was planned			
Yes	92 (54.4)	290 (65.5)	0.72 (0.56–0.93)
No	77 (45.6)	153 (34.5)	

Table 2 Maternal and foetal outcomes in the pregnancy cohort compared for women with and without history of domestic violence during pregnancy

Characteristic	Domestic violence during pregnancy ($n = 169$), n (%)	No domestic violence during pregnancy ($n = 443$), n (%)	Odds ratio (95% CI)
Hospitalization during pregnancy ($n = 604$)			
Yes	130 (76.9)	85 (19.4)	6.53 (4.70–9.08)
No	36 (23.1)	353 (80.6)	
Haemorrhage†			
Present	78 (46.2)	176 (39.7)	1.21 (0.94–1.56)
Absent	91 (53.7)	267 (60.3)	
Anaemia documented			
Present	129 (76.3)	304 (68.6)	1.33 (0.98–1.82)
Absent	40 (23.7)	139 (31.4)	
Hypertension			
Present	46 (27.2)	83 (18.7)	1.40 (1.06–1.85)
Absent	123 (72.8)	360 (71.3)	
Mode of delivery			
Caesarean section or other	23 (13.8)	67 (16.2)	0.91 (0.63–1.33)
Vaginal delivery	144 (85.2)	371 (83.7)	
Foetal maturity grading			
Preterm birth‡	44 (26.0)	80 (18.1)	1.45 (1.08–1.96)
Term birth§	91 (53.8)	282 (63.7)	1.00
Small-for-dates birth¶	34 (20.1)	81 (18.2)	1.21 (0.87–1.69)
Birthweight category			
Low birthweight	79 (46.7)	148 (33.4)	1.49 (1.16–1.92)
Normal weight	90 (53.3)	295 (66.6)	

†Including threatened abortion and antepartum haemorrhage. ‡OR 1.45 (95% CI 1.08–1.96). §Reference group. ¶OR 1.21 (95% CI 0.87–1.69).

fewer exposed participants reported that pregnancy timing was appropriate ($P = 0.009$) or that the pregnancy was planned ($P = 0.012$). There was no statistically significant difference in the HIV status.

Exposed participants were more likely to deliver a LBW infant, get pregnancy-related complications (like febrile illness, hypertension, PROM, antepartum haemorrhage or anaemia) and have antepartum hospitalization than the unexposed (Table 2). There was no significant difference regarding non-specific complaints (such as headache, dizziness, vulval itching, low abdominal pain or backache) or mode of delivery (caesarean section *vs.* vaginal delivery). There was a marginally significant difference regarding maturity status of the newborn (term, preterm or small-for-gestation age) P for trend 0.055.

There was a statistically significant difference in mean birthweight between exposed (2647.5 ± 604 g) and non-exposed (2834.0 ± 628 g), a mean difference of 186 g [(95% CI 76–296); $P = 0.001$]. Maternal age might confound the relationship between domestic violence and risk of LBW. Likewise, there might be interaction between domestic violence and maternal age (or other covariates) regarding risk of LBW delivery or antepartum hospitalization. When adolescents and older women were compared, there was no significant difference in mean birthweight (2765.7 ± 645 g and 2787.7 ± 622 g, respectively), with a mean difference of 59 g [(95% CI −138.0–94.3); $P = 0.711$]. Even after stratifying for domestic violence, the mean birthweight of adolescents and older women did not differ significantly ($P = 0.425$).

Table 3 shows the relative and attributable risk of domestic violence during pregnancy, indicating a significant relationship between domestic violence during pregnancy and risk of LBW and antepartum hospitalization. Poisson regression and generalized linear modelling were performed to determine the RR (using incident risk ratios) of these outcomes while adjusting for selected sociodemographic, decision-making and pregnancy intention variables. The adjusted RR for antepartum hospitalization and LBW remained significant at 3.78 (95% CI 2.86–5.00) and 1.37 (95% CI 1.02–1.84), respectively. The attributable

Table 3 Relative and attributable risk of domestic violence for low birthweight and antepartum hospitalization in the pregnancy cohort

Estimate	Low birthweight†	Antepartum hospitalization†
Crude relative risk	1.37 (1.11–1.69)	4.05 (3.30–4.99)
Adjusted relative risk‡	3.78 (2.86–5.00)	1.37 (1.02–1.84)
Incidence rate difference (attributable risk)	0.21 (0.08–0.34)	1.43 (1.17–1.70)
Population attributable risk§	0.41 (0.19–0.57)	0.94 (0.91–0.96)
Population attributable fraction§	0.19	0.74

†Numbers in brackets indicate 95% CI. ‡Adjusted for age, parity, number of living children, nature of prior pregnancy, pregnancy planning, domicile and household decision making. Respective *P*-values for goodness-of-fit of the models for LBW and antepartum hospitalization were 0.661 and 0.830. §Prevalence of exposure taken as 50%; estimates are based on the adjusted risk estimates.

risk (based on the adjusted risk estimates) indicates that 21% of the LBW deliveries are attributable to domestic violence. This corresponds to a 41% incidence of LBW in the population associated with prevalence of violence. In the population, 19% of LBW and 74% of antepartum hospitalization are attributable to domestic violence.

Table 4 shows the risk factors for LBW delivery and antepartum hospitalization adjusted for domestic violence during pregnancy and potential confounding variables in the final multivariate logistic regression model. Pregnancy timing and pregnancy planning could not be included in the same model because of colinearity between them. Similarly, there was colinearity between pregnancy planning and antepartum hospitalization. In the final model, domestic violence was a significant risk factor for LBW and antepartum hospitalization.

Discussion

The study findings show that domestic violence during pregnancy was a risk factor for LBW and antepartum hospitalization. A significant proportion of LBW and antepartum hospitalization in this cohort was attributable to domestic violence, an effect possibly because of increased number of pregnancy-related complications among women reporting domestic violence. The mean birthweight of infants born to such women was significantly lower than those without such history. As

Table 4 Risk factors for low birthweight adjusted for domicile, pregnancy planning and antepartum hospitalization

Characteristic	Model 1 for LBW Unadjusted OR (95% CI)	Adjusted OR (95% CI)†	Model 2 for antepartum hospitalization Unadjusted OR (95% CI)	Adjusted OR (95% CI)†
Domestic violence‡	1.49 (1.19–1.62)	1.66 (1.07–2.56)	6.53 (4.70–9.08)	1.44 (0.84–2.50)
Age (years)	1.00 (0.97–1.03)	0.98 (0.93–1.03)	1.03 (1.00–1.05)	0.93 (0.93–1.03)
Parity	1.06 (0.97–1.15)	0.90 (0.73–1.11)	1.06 (0.98–1.16)	0.91 (0.74–1.12)
Number of living children	0.98 (0.88–1.11)	1.13 (0.91–1.42)	1.07 (0.96–1.20)	1.12 (0.90–1.40)
Pregnancy timing§	1.20 (1.03–1.40)	0.81 (0.53–1.25)	0.97 (0.78–1.21)	0.82 (0.53–1.30)
Domicile¶	0.98 (0.82–1.16)	1.01 (0.60–1.71)	0.99 (0.67–1.46)	1.18 (0.71–1.96)

†OR adjusted for all covariates in the model. ‡Domestic violence during pregnancy (reference group) *vs.* no domestic violence. §Normal timing (Reference group) *vs.* mistimed. ¶Rural (reference group) *vs.* Urban.
Model 1 summary:
Log likelihood = −275.8
Number of obs = 418
Likelihood ratio χ (4) = 9.53
Prob $<\chi^2 = 0.0491$
Pearson χ^2 (231) = 224.0
Prob $>\chi^2 = 0.450$
Model 2 summary:
Log likelihood = −202.6
Number of obs = 425
Likelihood ratio χ (4) = 187.4
Prob $<\chi^2 = 0.000$
Pearson χ^2 (231) = 203.2
Prob $>\chi^2 = 0.766$

birthweight is a continuous variable, cut-off point of 2500 g is artificial and arbitrary. However, LBW is a recognized risk factor for neonatal morbidity and mortality, irrespective of gestational age at birth (Golding 1991). Domestic violence might affect birthweight without reducing it to such a drastic extent that LBW occurs. It could, however, predispose those affected to preterm labour and preterm delivery leading to LBW birth.

The effect of domestic violence on birthweight might be mediated by other factors such as stress, substance abuse and malnutrition (Kearney *et al.* 2004). Consequently, abuse might contribute to preterm delivery LBW through different mechanisms from that by which it causes term small-for-date delivery LBW (Petersen *et al.* 1997; Kearney *et al.* 2004). Victimization and resultant stress may exacerbate chronic illnesses such as hypertension, asthma or heart disease, with deleterious effects on the mother and foetus, or contribute to isolation and inadequate access to health care, increased behavioural risks (such as cigarette smoking and alcohol abuse), or inadequate maternal nutrition. All these may compromise maternal health and foetal growth during pregnancy.

Prenatal stress has been associated with several adverse outcomes including preterm labour and LBW through activation of the neuroendocrine hypothalamic–pituitary–adrenal or placenta–adrenal axes (Wadhwa *et al.* 1996; Sandman *et al.* 1997; Harlbreich 2005), with resultant effects on uteroplacental blood flow. This effect may be dependent on the gestation age, at which stress occurs, and both the nature and the severity of the stressor (Glynn *et al.* 2002). Altarac and Strobino (2002) provided some evidence to the role of stress. They found that the adjusted mean birthweight of LBW infants in women reporting stress because of abuse was 372 g (95% CI 149–595) lower than for LBW infants of women reporting no stress.

Adolescents have a higher risk of both domestic violence (McFarlane *et al.* 1992; Kaye *et al.* 2002) and LBW delivery (Golding 1991) than older women. Therefore, maternal age might confound the relationship between domestic violence and risk of LBW. Likewise, there might be interaction between domestic violence and maternal age (or other covariates) regarding risk of LBW or antepartum hospitalization. Our stratified analysis did not show a statistically significant difference when adolescents and older women were compared regarding risk of these outcomes among exposed and non-exposed participants. With respect to LBW delivery, our results differ from Parker *et al.* (1994) who found a significant difference in mean birthweight related to abuse when teenagers and older women were compared.

Our findings indicate that domestic violence contributes significantly to the public health burden of LBW and hospitalization independent of maternal age and parity. After adjusting for age and other variables, domestic violence was significantly associated with risk of LBW delivery. While the attributable risk in Table 3 indicates the additional risk of either LBW or antepartum hospitalization following domestic violence, the RR (or relative rate) indicates how many times women with domestic violence are likely to manifest these two adverse outcomes (Fletcher & Fletcher 2005). The RR is thus a measure of the strength of association. The attributable risk indicates how much more LBW or antepartum hospitalization is due to exposure (domestic violence) and which might be prevented (by eliminating domestic violence).

The population attributable risk takes into consideration the high prevalence (of domestic violence) to estimate the population risk (Kirkwood 1988). It measures the excess risk in the community associated with domestic violence compared with the non-exposed (Kirkwood 1988; Fletcher & Fletcher 2005). The prevalence of domestic violence during pregnancy is over 50% (Kaye *et al.* 2002), while the prevalence of LBW is about 12% in our setting. The population attributable fraction (or population proportional attributable risk) indicates the fraction (in the population) of the two outcomes associated with domestic violence (Kirkwood 1988; Fletcher & Fletcher 2005).

The strength of our study lies in the prospective design and attempts made to control for potential bias. In case–referent studies testing the hypothesis that abuse is a risk factor for LBW, both cases and referents must come from the same source population. First, our participants were sampled independently of the exposure and outcomes, and did not markedly differ regarding baseline characteristics. Second, non-random misclassification was reduced, as the assessors of the pregnancy outcomes were not the same research assistants who recruited the participants. The research assistants were unaware of the study hypothesis. Third, the exposure was assessed on more than one occasion (recruitment, follow-up and during labour), and violence that occurred in the period from recruitment to delivery led to classification of the participant as exposed irrespective of prior classification. Fourth, our sample size was adequate. Variables selected to evaluate confounding were derived from previous qualitative (Kaye *et al.* 2005) and quantitative research (Kaye *et al.* 2006).

Confounding because of HIV status may not have been fully evaluated as there were no data available to compare CD4 cell counts or stage of the disease between exposed and non-exposed participants. However, only 39 (6.4%) participants were HIV positive. If these were excluded from analysis, estimates of the risk between domestic violence and our outcomes would not change significantly. Likewise, loss to follow-up of 84 women might not have

been random, as domestic violence may be one reason why women fail to attend antenatal care. Of the 84 women, 26 had been classified as exposed by the time of loss to follow-up. Carrying out a worst-case/best-case analysis, and assuming that all the lost to follow-up belonged to the non-exposed or exposed category, the results would not differ significantly, as odds ratios for LBW would remain 2.17 (1.76–2.69) and 1.44 (1.14–1.83), respectively.

The difference between our findings and previous studies might be due to methodological differences (Ellsberg *et al.* 2001) in definition and assessment of the exposure, means of data collection (interview or questionnaire), and differences in prevalence of violence and whether the sample assessed was a clinical sample or a population sample. Interviews yield higher prevalence rates than self-administered questionnaires, and more than one opportunity to interview research participants gives higher response rates (Ellsberg *et al.* 2001). Although survivors may decline revealing their experiences (giving negative answers to violence screening questions), participants never over-report or exaggerate experiences (Ellsberg *et al.* 2001). The findings thus suggest that domestic violence during pregnancy is a risk factor for both LBW and antepartum hospitalization.

Conclusion

Domestic violence during pregnancy is significantly associated with both LBW and antepartum hospitalization (following pregnancy complications). The two outcomes are significantly attributable to domestic violence. The implication of this study is that screening for behavioural markers such as domestic violence during pregnancy might assist health care providers to predict which women are at risk of LBW delivery. Pregnant women should be screened for domestic violence during the antenatal period, as should pregnant women admitted to hospital. Any survivors thus identified through screening require counselling and closer follow-up to identify obstetric complications that may lead to perinatal complications.

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Violence conjugale durant la grossesse, risque d'insuffisance pondérale à la naissance et complications maternelles: une étude de cohorte prospective à l'hôpital Mulago, Ouganda

OBJECTIFS Evaluer si les violences conjugales durant la grossesse sont un facteur de risque pour l'hospitalisation avant-terme et l'insuffisance pondérale à la naissance (IPN).

MÉTHODES Une étude de cohorte prospective a été conduite, de Mai 2004 à Juillet 2005, à l'hôpital Mulago (Kampala, Ouganda) parmi 612 femmes recrutées durant leur deuxième trimestre de grossesse et suivies jusqu'à leur accouchement. L'exposition (violences physiques, sexuelles ou psychologiques durant la grossesse) étaient évaluées à l'aide de l'Echelle d'Evaluation des Abus (« Abuse Assessment Screen »). Les risques relatifs et attribuables d'insuffisance pondérale à la naissance et d'hospitalisation avant terme ont été estimés en utilisant une analyse multivariée en régression logistique.

RÉSULTATS Concernant les caractéristiques socio-demographiques, il n'y avait pas de différence significative entre les 169 femmes (27.7%; IC 95% [24.3; 31.5%]) rapportant des violences conjugales durant leur grossesse et les non exposées. Par contre elle différaient de façon significative ($P < 0,05$) en ce qui concernait les variables familiales (elles avaient moins de pourvoir décisionnel concernant le ménage, résidaient plus souvent dans des familles nombreuses et elles avaient plus de grossesse non planifiées). Elles ont donné naissance à des bébés ayant un poids moyen de naissance de 2647.5 ± 604 g, soit 186 g (IC 95% [76; 296]; $P = 0.001$) de moins par rapport aux non exposées. Apres ajustement sur l'âge, la parité, le nombre d'enfants vivants, les grossesses planifiées, le domicile et le nombre d'années de mariage, le risque relatif d'IPN parmi les femmes exposées à des violences conjugales étaient de 3.78 (IC 95% [2.86; 5,00]). Ces femmes avaient un risque plus élevé de 37% de faire des complications obstétricales (hypertension, ruptures prématurées des membranes et anémies) nécessitant une hospitalisation avant terme (RR 1.37; IC 95% [1.01; 1.84]).

CONCLUSION Dans cette cohorte de femme enceintes, les violences conjugales pendant la grossesse étaient un facteur de risque pour l'IPN et l'hospitalisation avant terme.

mots clefs Violences conjugales, grossesse, insuffisance pondérale a la naissance, hospitalisation avant terme, risque relatif et attribuable, Ouganda

Violencia doméstica durante la gravidez, riesgo de bajo peso al nacer y complicaciones maternales: un estudio con una cohorte prospectiva en el Hospital de Mulago, en Uganda

OBJECTIVOS Investigar si la violencia doméstica durante la gravidez es un factor de riesgo de hospitalización previa al parto o bajo peso al nacer (LBW).
MÉTODOS Se realizó un estudio con una cohorte prospectiva en el hospital de Mulago, en Kampala, Uganda, entre 612 mujeres reclutadas en el segundo trimestre de gravidez, y controladas hasta el parto, desde mayo de 2004 hasta julio de 2005. La exposición (violencia física, sexual o sicológica durante la gravidez) se estableció utilizando la Encuesta de Valoración del Maltrato (Abuse Assessment Screen – ASS). El relativo y atribuible riesgo de bajo peso al nacery de hospitalización previa al parto se estimó utilizando un análisis de regresión logística multivariable.
RESULTADOS Las 169 mujeres [27.7% 95% CI (24.3–31.5%)] que informaron de violencia domestica durante la gravidez no diferían significativamente de las no expuestas en relación a las características socio demográficas, pero difirieron significativamente ($P < 0.05$) en relación a variables domésticas (tenían menor poder de decisión en el hogar, muchas vivían en familias extendidas y muchas habían tenido una gravidez no planificada). Tuvieron niños con un peso medio al nacer de 2647.5 ± 604 g, de promedio 186 g [(95% CI 76–296); $P = 0.001$] por debajo de las no expuestas. Luego de hacer los ajustes por edad, paridad, número de niños vivos, planificación de gravidez, domicilio y número de años de matrimonio, el riesgo relativo de bajo peso al nacer entre las mujeres expuestas a violencia doméstica fue de 3.78 (95% CI 2.86–5.00). Este tipo de mujeres tenían un 37% mayor de riesgo de complicaciones obstétricas (como por ejemplo hipertensión, ruptura prematura de membranas y anemia), y de necesidad de hospitalización anterior al parto [RR 1.37 (95% CI 1.01–1.84)].
CONCLUSIONES En esta cohorte de gravidez, la violencia doméstica durante el embarazo fue un factor de riesgo para partos con bajo peso al nacer y hospitalización anterior al parto.

palabras clave violencia doméstica, bajo peso al nacer, hospitalización previa al parto, riesgo relativo y atribuible, Uganda