

# Intimate Partner Violence During Pregnancy: Maternal and Neonatal Outcomes

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## Abstract

The effects of intimate partner violence (IPV) on maternal and neonatal outcomes are multifaceted and largely preventable. During pregnancy, there are many opportunities within the current health care system for screening and early intervention during routine prenatal care or during episodic care in a hospital setting. This article describes the effects of IPV on maternal health (e.g., insufficient or inconsistent prenatal care, poor nutrition, inadequate weight gain, substance use, increased prevalence of depression), as well as adverse neonatal outcomes (e.g., low birth weight [LBW]), preterm birth [PTB], and small for gestational age [SGA]) and maternal and neonatal death. Discussion of the mechanisms of action are explored and include: maternal engagement in health behaviors that are considered “risky,” including smoking and alcohol and substance use, and new evidence regarding the alteration of the hypothalamic-pituitary-adrenal axis and resulting changes in hormones that may affect LBW and SGA infants and PTB. Clinical recommendations include a commitment for routine screening of IPV in all pregnant women who present for care using validated screening instruments. In addition, the provision of readily accessible prenatal care and the development of a trusting patient–provider relationship are first steps in addressing the problem of IPV in pregnancy. Early trials of targeted interventions such as a nurse-led home visitation program and the Domestic Violence Enhanced Home Visitation Program show promising results. Brief psychobehavioral interventions are also being explored. The approach of universal screening, patient engagement in prenatal care, and targeted individualized interventions has the ability to reduce the adverse effects of IPV and highlight the importance of this complex social disorder as a top priority in maternal and neonatal health.

## Introduction

**I**NTIMATE PARTNER VIOLENCE (IPV) during pregnancy is a serious public health issue with significant negative health consequences for women and children.<sup>1–6</sup> The majority of research has found that between 3% and 9% of women experience abuse during pregnancy,<sup>7,8</sup> though there are well established risk factors that are associated with higher rates of abuse, including young age, single relationship status, minority race/ethnicity, and poverty.<sup>9,10</sup> Indeed, studies conducted among samples of low-income, predominantly single women have noted higher prevalence with rates up to 50%.<sup>11–13</sup> The wide range in prevalence estimates has been attributed to several causes including differences among the populations sampled, measurements used to assess for IPV, inconsistencies in defining IPV, and differences in defining the time frame for abuse during the perinatal period. This review

uses the U.S. Centers for Disease Control and Prevention’s uniform definition for IPV;<sup>14</sup> that is, IPV is a pattern of coercive control of one intimate partner by the other that includes physical and sexual violence, threats of physical or sexual violence, and emotional abuse in the context of physical and sexual violence.

Research that has assessed IPV in all three trimesters demonstrates a higher prevalence than those studies that most commonly screen for IPV only once, typically during the first prenatal appointment.<sup>15</sup> Both early clinic studies,<sup>16</sup> and large-scale population-based studies using Pregnancy Risk Assessment Monitoring System (PRAMS) data<sup>5,7,8</sup> found that the prevalence of IPV during pregnancy was lower than the year prior to pregnancy. An in-depth qualitative study examining abuse patterns during pregnancy suggested that for approximately one-third of battered women, pregnancy was a protective period, while for another group (approximately 15% of

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those abused during pregnancy), abuse started or worsened during pregnancy often due to partners doubting the baby was theirs. However, abuse patterns remained consistent for the largest proportion of women abused during pregnancy.<sup>17</sup>

### **Intimate Partner Violence and Maternal Health**

#### *Health behaviors*

Experiencing IPV during pregnancy is associated with a multitude of pregnancy-specific behaviors. Research has shown that women abused during pregnancy are twice as likely to miss prenatal care appointments or initiate prenatal care later than recommended.<sup>18–20</sup> Women experiencing IPV are also twice as likely to not initiate prenatal care until the third trimester<sup>21</sup> and are significantly more likely to miss three or more prenatal visits than their nonabused counterparts (45% vs. 28%).<sup>22</sup> Extant research supports an association between insufficient prenatal care and adverse birth outcomes, including preterm delivery and low birth weight (LBW).<sup>23,24</sup>

Poor nutrition and inadequate gestational weight gain have also been associated with experiencing abuse during pregnancy. Several studies have documented an association between IPV during pregnancy and poor weight gain.<sup>25–27</sup> Research has demonstrated the significant impact of IPV on women's health behaviors during pregnancy, including higher rates of smoking,<sup>11,28</sup> alcohol use, and substance use.<sup>29–31</sup> Inadequate weight gain, smoking, alcohol use, and substance use are well-established risk factors for adverse neonatal outcomes and will be discussed in greater detail below.

A growing body of literature includes studies examining the role of IPV in affecting sexual health. A systematic review of IPV and sexual health found that the majority of studies addressing sexual risk taking, inconsistent condom use, or partner nonmonogamy found that experiencing IPV was associated with sexual risk taking of the woman or her partner. Similarly, IPV was associated with having an unplanned pregnancy or an induced abortion in the majority of studies (13 out of 16) reviewed. Finally, nearly 80% of those studies examining the association between IPV and sexually transmitted infections or urinary tract infections found an association.<sup>32</sup>

#### *Maternal mental health*

IPV during pregnancy is associated with depression, both during pregnancy<sup>19,33,34</sup> and in the postpartum period.<sup>35–37</sup> Indeed, women experiencing abuse during pregnancy are 2.5 times more likely to report depressive symptomatology than their nonabused counterparts.<sup>22</sup> Depression has been identified as the most common mental health consequence of IPV, with nearly 40% of abused women reporting depressive symptomatology.<sup>34,38</sup> Post-traumatic stress disorder (PTSD) is also a common sequelae of IPV with reported rates of PTSD ranging between 19% and 84%.<sup>39–41</sup> Abused women experience depression and PTSD as comorbidities at significantly higher rates than nonabused women. Research examining depression and PTSD had found that in 49%–75% of the cases, major depression co-occurred with PTSD.<sup>42,43</sup>

The gravest consequences of IPV during pregnancy include homicide and suicide. Several studies have indicated that maternal injury is a leading cause of maternal mortality.<sup>44–46</sup> Homicide and suicide are two potentially preventable

causes of maternal injury. A recent study utilized a multistate sample from the National Violent Death Reporting System and found pregnancy-associated suicide and homicide rates of 2.0 and 2.9 deaths per 100,000 live births, respectively. Further, 54.3% of pregnancy-associated suicides involved intimate partner conflict attributable to the suicide, and 45.3% of pregnancy-associated homicides were associated with IPV.<sup>47</sup> Similar results have been found in several other studies.<sup>48–51</sup> These findings highlight that pregnancy-associated suicide and homicide each account for more deaths than many of the more “traditional” obstetrical causes of maternal mortality that receive greater attention.

### **Intimate Partner Violence and Neonatal Outcomes**

#### *Low birth weight and preterm birth*

The effects of IPV extend to the consequent health of the neonate. A sizeable body of research supports the role of IPV in low birth weight and increased rates of preterm birth (PTB).<sup>1,3–6</sup> LBW and PTB are well established leading causes of neonatal morbidity and mortality.<sup>13</sup> An analysis of the U.S. PRAMS data revealed a significant association between IPV during pregnancy and delivering a neonate classified as LBW, after adjusting for smoking maternal age, government assistance, and education.<sup>5</sup> A study examining maternal, fetal, neonatal, and infant outcomes of women hospitalized for assault during pregnancy found that women who delivered an infant during the assault hospitalization were over three times as likely to deliver a LBW neonate (odds ratio [OR]=3.10, 95% confidence interval [95% CI]=1.25–7.71) as compared with unassaulted women. Further, women discharged after an assault, delivering at a subsequent hospitalization had increased risk of abruption (OR=1.8, 95% CI=1.3–2.5), hemorrhage (OR=1.8, 95% CI=1.4–2.5), and LBW (OR=1.7, 95% CI=1.5–1.9) as compared with unassaulted women. This highlights the need to monitor undelivered assaulted women closely for the duration of their pregnancies.<sup>6</sup> Similarly, women who had documented police reports of IPV occurring during pregnancy were more likely to have a LBW neonate (OR=1.67, 95% CI=1.12–2.49) or a very LBW infant (e.g., less than 1500 grams) (OR=2.78, 95% CI=1.35–5.74).<sup>52</sup> When assessing the influence of frequency of abuse during pregnancy, research has demonstrated more frequent abuse (e.g., greater than 10 times during pregnancy) as predictive of delivering a LBW neonate (OR=2.9, 95% CI=1.2–6.6).<sup>53</sup> Finally, two recent meta-analyses of IPV-pregnancy studies found women experiencing IPV during pregnancy were at increased risk for PTB and delivering a LBW neonate.<sup>1,3</sup> It is important to note that several studies have not found a significant relationship between IPV and delivering preterm or having a LBW neonate.<sup>54–57</sup> A possible explanation for the failure of previous research to find associations between abuse and adverse neonatal outcomes is that the study sample sizes were relatively small, and the reported prevalence of abuse during pregnancy was low. Several of the studies had samples of less than 600 women, and the prevalence of violence in five studies was  $\leq 10\%$ .<sup>54,55,57–60</sup> Similarly, it is important to note that generalizations are difficult across studies finding positive associations due to different populations sampled, assessments, methods, and data analysis. For example, studies do not uniformly control for background and other related

factors associated with either IPV or newborn outcomes (i.e., maternal age, socioeconomic status, health behaviors).

#### *Small for gestational age*

Less studied is the association between IPV during pregnancy and delivering a neonate classified as small for gestational age (SGA). SGA neonates are those who are smaller in size than normal for their gestational age, most commonly defined as a birth weight below the 10th percentile for the gestational age. SGA neonates are at increased risk of early childhood developmental and behavioral problems.<sup>61,62</sup> Importantly, existing research has demonstrated an association between being born SGA and an increased rate of coronary heart disease, stroke, noninsulin-dependent diabetes mellitus, adiposity, and metabolic syndrome in adulthood.<sup>63–65</sup> While limited, research examining the association between IPV during pregnancy and delivering a SGA neonate has yielded mixed results. This may be in part due to a wide variation in the prevalence (e.g., 3%–19%) of disclosed abuse in these studies.<sup>12,60,66</sup> There is a need for studies to explicate how intimate partner violence was defined, how the assessment was conducted (i.e., who assessed, where the assessment was conducted), and at what point during the perinatal period violence was assessed. A recent study conducted in a low-income, urban, predominantly African American sample found that after adjusting for education, income, marital status, and substance use, experiencing IPV was associated with over five times increased odds for any adverse neonatal outcome (e.g. SGA, LBW, PTB) (adjusted odds ratio [aOR] = 5.34; 95% CI = 1.97–14.46) and specifically with a fourfold increase in having a SGA neonate (aOR = 4.00; 95% CI = 1.58–9.97).<sup>12</sup>

#### *Perinatal death*

Several studies have investigated the association between IPV during pregnancy and perinatal death (e.g., fetal loss after 20 weeks gestation up to neonatal death occurring  $\leq$  28 days after delivery). In a large sample of women attending family practice clinics in South Carolina, abuse during pregnancy was significantly associated with an increased risk of perinatal death (adjusted relative risk = 2.1, 95% CI = 1.3–3.4).<sup>53</sup> In a large study that examined maternal and neonatal outcomes for those women hospitalized during pregnancy after sustaining an assault, researchers found that women delivering in the same hospital stay as the assaultive episode had more than an 8-fold increased risk of fetal death (aOR = 8.13, 95% CI = 4.6–14.3) and nearly a 6-fold increased risk of neonatal death (aOR = 5.94; 95% CI = 3.43–10.28).<sup>6</sup> Finally, in a large sample of low-income women residing in Texas, experiencing physical abuse during pregnancy was associated with an increased neonatal death rate (1.5% versus 0.2%,  $p = 0.004$ ), physical-abuse group versus no-abuse group (i.e., verbal, physical), respectively.<sup>67</sup>

#### *Mechanisms of action*

There is a growing recognition of the need to better understand how the experience of IPV may contribute to poor maternal and neonatal outcomes. IPV may contribute to poor outcomes, including an increased risk of spontaneous abortion, fetal loss, PTB, LBW, and neonatal death, as a direct result of blunt physical trauma to the mother. Physical trauma

is an important predictor of mortality in young women, and is the leading cause of death in pregnancy.<sup>68,69</sup> Furthermore, African American trauma patients have higher mortality rates and worse outcomes than Caucasians, highlighting the need for a more comprehensive assessment of contributions to evident health disparities in neonatal outcomes.<sup>70</sup> A recent study examining trauma center registries in a level-1 urban trauma center over a period of 2 years found injuries occurring in the context of IPV were reported in 22% of cases. Importantly, an additional 40% of the cases could not be characterized further than being an assault. Further, women injured by stabbing were three times more likely to have a history of psychiatric illness or report IPV.<sup>71</sup>

In addition to blunt physical or sexual trauma to the mother, abuse during pregnancy may increase the risk of perinatal death, PTB, LBW, and SGA through one or more of the following mechanisms: negative maternal coping behaviors, inadequate or poor maternal nutrition, isolation and poor or limited access to prenatal care, and elevated physical or psychological stress levels. Indirect mechanisms may impact adverse pregnancy outcomes through varied pathways. For example, psychological stress may exacerbate preexisting conditions such as hypertension and gestational diabetes, or it may lead to pregnancy complications including preeclampsia or preterm labor.<sup>72</sup>

Women with significant psychosocial stressors, including the experience of IPV, are more likely to engage in risky health behaviors such as smoking, alcohol use, and substance use and are less likely to see health care.<sup>11,27,28,73</sup> These behaviors are associated with poor maternal and neonatal outcomes, and also place women at greater risk for unintended pregnancies and sexually transmitted infections.<sup>74–76</sup> Similarly, research supports an association between high levels of depressive symptoms and PTB or LBW in a high risk sample of women.<sup>77</sup> Depression may act as a mediator for engaging in other negative health behaviors including the use of tobacco, illicit substances, and alcohol during pregnancy.<sup>78</sup>

Finally, the stress of experiencing abuse during pregnancy may alter a woman's hypothalamic-pituitary-adrenal (HPA) axis. Our understanding of this causal pathway is growing, largely due to animal research. Animal studies have demonstrated that exposure to stress in the perinatal period causes heightened sensitivity to induced HPA hormone secretion in both mother and offspring.<sup>79</sup> As a result, higher levels of HPA hormones, including corticotrophin-releasing hormone (CRH), could initiate labor as well as restrict utero-placental perfusion.<sup>80</sup> Increasing evidence suggests that CRH could act as a "placental clock" that may be accelerated by exposure to physiological or psychological stress.<sup>81</sup> Several prospective studies have found that maternal levels of CRH were significantly elevated by mid gestation in women who subsequently delivered prematurely and that maternal psychosocial stress levels at mid gestation significantly predicted the magnitude of CRH increase between mid and late gestation.<sup>82–84</sup> There is an appreciable need for further research in this area, particularly to better understand how timing of abuse and severity of abuse may result in clinically meaningful biological changes in both mother and child.

#### **Clinical Implications**

Routine screening for IPV in the health care setting could identify women at risk of or experiencing IPV and lead to

interventions that reduce violence and improve maternal and child outcomes. Proponents of screening offer several key aspects for its benefit including the high prevalence of IPV and documented negative sequelae, the acceptability of screening among women, the availability of feasible screening instruments and techniques, and the opportunity to provide additional resources and referrals in those women screening positive.<sup>85–88</sup> The U.S. Preventive Services Task Force recently updated its recommendations on screening women for IPV and concluded that screening instruments accurately identify women experiencing IPV and screening could reduce IPV and improve outcomes depending on the population screened and outcome measured.<sup>89</sup> Furthermore, several professional organizations and health care organizations support screening for violence.<sup>90,91</sup>

Despite multiple organizations endorsing screening for IPV, evidence suggests actual screening rates in health care settings remain low. There are several reasons for low screening rates, including gaps in provider knowledge and lack of education regarding IPV; provider perception that patients won't be compliant (i.e., patients will not disclose abuse); lack of effective interventions to adequately address IPV; provider self-efficacy; fear of offending patients; providers' personal experience with abuse; fears of being involved with the judicial system; and lack of standardized recommendations on timing and frequency of screening.<sup>92</sup> Clearly, efforts to improve universal screening for IPV in health care settings are necessary. Further research is needed on validating screening tools in a variety of geographic, cultural and practice settings. Additionally, more research is needed to determine the most accurate, efficient, and consistent way to administer screening instruments.

Prenatal care presents a unique window of opportunity in which health care providers can foster trusting relationships with pregnant women, thereby increasing the likelihood of IPV detection and mitigating its related negative consequences to both mother and child. Importantly, for many women, pregnancy is the only time they maintain regular contact with health care providers further highlighting the need to form a trusting patient–provider relationship.<sup>93</sup>

There is a growing consensus that screening for IPV is a safe and effective practice and a necessary first step in addressing IPV. Less clear is how to intervene with IPV in the perinatal care setting and which interventions should be adopted. Home visitation (HV) is one such targeted intervention designed to prevent or reduce IPV victimization and perpetration. The Nurse–Family Partnership, developed by David Olds et al., is a well-known HV program that has been tested in several randomized controlled trials with young high-risk pregnant women.<sup>94</sup> Addressing IPV was not an original goal of the program, yet the intensity of the program presents a unique opportunity for fostering relationships between nurses and mothers, thereby offering an opportunity to intervene with women experiencing IPV. In one trial, nurse-visited women reported significantly less IPV exposure in the previous 6 months at the 4-year follow-up as compared with women in the control group.<sup>95</sup> Another promising IPV intervention includes the Domestic Violence Enhanced Home Visitation Program (DOVE), delivered within the context of HV. This program is being tested in urban and rural sites within the United States.<sup>96</sup> An important challenge for HV programs is identifying and retaining abused pregnant wo-

men in their programs, and this is an area in need of additional research.

Other research has examined the efficacy of a psychobehavioral intervention in reducing IPV during pregnancy and in the postpartum period finding women in the intervention group were less likely to have recurrent episodes of IPV victimization (OR=0.48, 95% CI=0.26–0.80), and women reporting severe IPV showed significantly reduced episodes at follow-up in the postpartum period (OR=0.39, 95% CI=0.18–0.82).<sup>97</sup> These results support the use of a relatively brief intervention delivered during pregnancy. Yet, other studies implementing interventions did not find significant differences in IPV between the intervention and control groups however these were pilot studies.<sup>98,99</sup> Furthermore, in one of the pilot studies, the majority of the sample reported “severe” abuse, which related to greater impairment. Thus, the impact of a brief intervention may be limited in women with severe forms of abuse.<sup>98</sup> This highlights the need for additional large-scale, rigorous research to provide evidence about the effects of interventions in mitigating the impact of violence.

## Discussion

Taken together, a burgeoning body of literature supports the role of IPV during pregnancy in contributing to adverse maternal and neonatal outcomes. Yet, maternal complications of pregnancy (e.g. preeclampsia, gestational diabetes) that are associated with a lower prevalence of maternal and fetal death than IPV receive greater interest and support for assessment, intervention, and prevention. Several mechanisms for how IPV may influence adverse maternal and neonatal outcomes have been proposed, including direct effects, mental health effects, behavioral effects, and biological effects, all of which offer health care providers opportunities to intervene. Screening for IPV during pregnancy is an important first step, and training of providers in identifying and treating IPV during the perinatal period is critical. In addition, developing and testing rigorous, evidence-based programs that can reduce IPV and improve maternal, neonatal, and early childhood outcomes is needed.

Efforts to effectively prevent the initiation of IPV should focus on healthy relationships across the lifespan, with an emphasis on children and youth. Programs and policies must be developed that are culturally based and responsive to those populations at greatest risk. The causes of IPV are complex and often the result of individual, familial, community, and societal factors. It is important to find ways to include diverse professional perspectives as well as increased community participation to address IPV in diverse communities. These perspectives may include, but are not limited to, law enforcement, nurses, physicians, social workers, advocacy groups, and academic–community collaborations. Effective responses to IPV require comprehensive, well-coordinated policies and procedures that maximize community resources. Collaborations across disciplines are essential if we are going to make progress in reducing the disparities in health outcomes for mothers and children.

## Author Disclosure Statement

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