



Violence against pregnant women: Prevalence, patterns, risk factors, theories, and directions for future research

Tamara L. Taillieu ^{*}, Douglas A. Brownridge

35 Chancellor's Circle, University of Manitoba, Winnipeg, MB, Canada R3T 2N2

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ABSTRACT

Violence against women is a global concern, and it is estimated that one in every five women will experience some form of violence in their lifetime (World Health Organization, 2005). Violence during pregnancy is of special concern due to the potential negative consequences to both the mother and her unborn child. This paper examines and consolidates findings from the extant research concerning the prevalence of violence against pregnant women, the nature and patterns of violence experienced by pregnant women, the factors that place women at risk for experiencing pregnancy violence, and the theories that may contribute to a better understanding of the violence directed at this specific vulnerable population. A number of areas that warrant attention in future research are discussed to address gaps in the extant literature that, if overcome, would facilitate a better understanding of violence against pregnant women.

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Contents

1.	Prevalence of violence against pregnant women	15
1.1.	Research on the prevalence of pregnancy violence up to 1996	15
1.2.	Research on the prevalence of pregnancy violence since 1996	16
1.2.1.	The prevalence of pregnancy violence in less developed nations	18
1.2.2.	Methodological issues contributing to the range of prevalence estimates	18
1.2.3.	The Abuse Assessment Screen (AAS)	20
2.	Patterns of violence against pregnant women	21
2.1.	Changing patterns of pregnancy violence	21
2.1.1.	Past abuse as a predictor of pregnancy violence	21
2.1.2.	Pregnancy period: respite or risk?	22
2.2.	The nature of violence against pregnant women	22
2.2.1.	The recurrent nature of pregnancy violence	22
2.2.2.	Changes in the frequency and severity of pregnancy violence	22
2.2.3.	Self-reported experiences of pregnancy violence	23
2.2.4.	Indicators of severity	23
2.2.5.	The risk for severe violence	23
3.	Risk factors for violence during pregnancy	23
3.1.	Victim characteristics	23
3.1.1.	Age	24
3.1.2.	Marital status	24
3.1.3.	Race/ethnicity	24
3.1.4.	Employment	25
3.1.5.	Education	25
3.1.6.	Other socioeconomic indicators	26
3.1.7.	Substance use	26
3.2.	Perpetrator characteristics	26
3.2.1.	Power and control	26
3.2.2.	Substance abuse	27

^{*} Corresponding author. Tel.: +1 204 474 8050; fax: +1 204 474 7592.

E-mail address: umtailli@cc.umanitoba.ca (T.L. Taillieu).

3.2.3.	Psychological and emotional abuse	27
3.2.4.	Social isolation	27
3.3.	Pregnancy-related factors	28
3.3.1.	Prenatal care	28
3.3.2.	Parity	28
3.3.3.	Pregnancy intention.	28
4.	Theoretical explanations	29
4.1.	Pregnancy-related stress	30
4.2.	Social learning theory	30
4.3.	Evolutionary psychology	30
5.	Directions for future research	31
5.1.	The prevalence of pregnancy violence	31
5.1.1.	Differentiating types of violence experienced during pregnancy	31
5.1.2.	The reliance on the AAS as a measurement tool.	31
5.1.3.	The separation of pre-pregnancy and during pregnancy violence in analyses	32
5.1.4.	Perpetrator assessment	32
5.2.	Understanding the patterns of violence against pregnant women.	32
5.2.1.	Does pregnancy change the pattern of violence?	32
5.2.2.	Assessing the frequency and severity of pregnancy violence	32
5.2.3.	Pregnant women's use of violence	32
5.3.	Risk factors contributing to pregnant women's vulnerability	33
5.3.1.	The inclusion of potentially high-risk groups in research	33
5.3.2.	Pregnancy violence in less developed nations.	33
5.3.3.	Personality characteristics of the male partner	33
5.4.	Theoretical development.	33
6.	Conclusion.	33
References	. . . . .	33

Violence against women is a global concern and it is estimated that one in every five women will face some form of violence their lifetime (World Health Organization, 2005). Pregnant women may be especially vulnerable due to an increase in their physical, social, emotional, and economic needs during pregnancy (Noel & Yam, 1992). In addition to pregnant women's unique vulnerability to experience intimate partner violence (IPV), pregnancy is also of special concern due to the potential negative consequences to both the mother and her unborn child. For example, the experience of violence during pregnancy has been linked to a number of adverse fetal outcomes including low birth weight, preterm labor and/or delivery, low maternal weight gain, kidney infection, antepartum hemorrhage, cesarean delivery, fetal wastage/miscarriage, and fetal/neonatal death (Cokkinides, Coker, Sanderson, Addy, & Bethea, 1999; Covington, Hage, Hall, & Mathis, 2001; Fried, Cabral, Amaro, & Aschengrau, 2008; Janssen et al., 2003; Moraes, Amorim, & Reichenheim, 2006; Murphy, Shei, Myhr, & DuMont, 2001; Nasir & Hyden, 2003; Valladares, Ellsberg, Peña, Höberg, & Persson, 2002; Yang, Ho, Chou, Chang, & Ko, 2006; Yost, Bloom, McIntire, & Leveno, 2005).

Women experiencing pregnancy violence are also subject to a number of detrimental physical and mental health outcomes. For example, women abused during pregnancy have been found to be 2.5 times more likely to report being depressed (Dunn & Oths, 2004) and to evidence clinically relevant levels of depression (Martin et al., 2006) than non-abused pregnant women.

A number of reviews of the literature on pregnancy violence have been conducted (e.g., Espinosa & Osborne, 2002; Gazmararian et al., 2000; Jasinski, 2004), with the majority focusing on a specific aspect of pregnancy-related violence. Research themes reviewed include prevalence (Gazmararian et al., 1996), health consequences (Chambliss, 2008; Sharps, Laughon, & Giangrande, 2007), adverse fetal outcomes (Murphy et al., 2001; Newberger et al., 1992), pregnancy-associated violent deaths (Martin, Macy, Sullivan, & Magee, 2007), IPV and unintended pregnancy (Pallitto, Campbell, & O'Campo, 2005), pregnancy following partner rape (McFarlane, 2007), and differences in pregnancy-related violence in developed and developing regions (Campbell, García-Moreno, & Sharps, 2004; Nasir & Hyden, 2003). Although these various aspects of pregnancy-related violence are integral to a more complete understanding of violence directed at

pregnant women, the extant literature is lacking a comprehensive review of the risk markers that may contribute to a pregnant woman's vulnerability and the patterns of violence experienced by pregnant women. Therefore, the purpose of this paper is to address this gap in the literature by examining and consolidating findings from the existing research concerning the prevalence of violence against pregnant women, the nature and patterns of violence experienced by pregnant women, the factors that put women at risk for experiencing pregnancy violence, and the theories that may contribute to a better understanding of the violence directed at this specific vulnerable population.

1. Prevalence of violence against pregnant women

The prevalence of violence within the population of pregnant women is important because it reflects the extent to which pregnancy can be considered a particularly vulnerable period. In 1996, Gazmararian et al. published an article that comprehensively reviewed studies reporting prevalence rates of pregnancy violence. A number of recommendations emerged as a result of this review and it remains unknown whether or not these limitations have been addressed in subsequent research. Therefore, the remainder of this section will provide a brief overview of the research covered in Gazmararian et al.'s article followed by a comprehensive review of research on the prevalence of pregnancy violence that has been published since 1996.

1.1. Research on the prevalence of pregnancy violence up to 1996

In a review of the prevalence of violence against pregnant women, Gazmararian et al. (1996) found that rates varied considerably between studies ranging from 0.9% to 20.6% (Amaro, Fried, Cabral, & Zuckerman, 1990; Berenson, Stiglich, Wilkinson, & Anderson, 1991; Berenson, San Miguel, & Wilkinson, 1992; Campbell, Poland, Waller, & Ager, 1992; Gazmararian et al., 1995; Gelles, 1988; Helton, McFarlane, & Anderson, 1987; Hillard, 1985; O'Campo, Gielen, Faden, & Kass, 1994; Parker, McFarlane, & Soeken, 1994; Sampsel, Peterson, Murtland, & Oakley, 1992; Stewart & Cecutti, 1993; Webster, Sweett, & Stoltz, 1994), with the majority of studies finding prevalence rates between 3.9% and 8.3%. A number of

methodological issues contributed to the wide range of prevalence estimates including sample characteristics (e.g., private clinic vs. public clinic), the mode of inquiry (e.g., self-administered questionnaire vs. multiple in-person interviews), the timing of inquiry (e.g., single point early in pregnancy vs. multiple points throughout pregnancy), and both the definition (e.g., physical, sexual, and/or emotional) and measurement of violence used (e.g., broad vs. specific forms; Campbell, 2002; Gazmararian et al., 1996). Higher prevalence rates have been associated with more inclusive definitions of abuse, more than a single item asking about abuse experiences, multiple in-person interviews, adolescence, and low income of the respondent (Campbell, 2002; Gazmararian et al., 1996). Gazmararian et al. (1996) suggested a number of future research endeavors as a result of their review. These recommendations included the development and utilization of standardized measures of violence, including measures of severity and chronicity,

to facilitate comparisons among different study populations. The authors also indicated that accurate perpetrator assessment and a broader range of sample populations were key directions for future research. In order to assess whether these avenues have been addressed in more recent research, prevalence rates and study characteristics of research investigating violence against pregnant women conducted since the Gazmararian et al. (1996) article are reviewed below.

1.2. Research on the prevalence of pregnancy violence since 1996

Similar to the review by Gazmararian et al. (1996), only studies involving samples with an unknown initial abuse status and with a focus on documenting the prevalence of violence against pregnant women are included in the current review. However, unlike the review by Gazmararian et al., which focused on physical violence

Table 1
Studies reporting prevalence rates of violence against pregnant women.

Author(s) (year)	Lifetime prevalence, % (types of violence included)	Past-year prevalence, % (types of violence included)	Prevalence during pregnancy, % (types of violence included)	Prevalence during postpartum period assessed
Curry (1998)	...	25.7% (physical) 4.5% (sexual)	10.5% (physical)	No
Leung et al. (1999)	17.9% (emotional, physical, sexual)	15.7% (physical, sexual) 9.4% (sexual)	4.3% (physical) ^a	No
Muhajarine and D'Arcy (1999)	...	8.5% (physical)	5.7% (physical)	No
Shumway et al. (1999)	...	...	36% (verbal abuse) ^b 30% (physical) ^b 16% moderate physical 14% severe physical	No
Covington et al. (2001)	...	...	13.5% (threats, physical, sexual) 6.7% moderate violence 6.7% severe violence	No
Janssen et al. (2003) ^c	...	...	1.9% (physical/fear partner) 1.2% (physical) 1.5% (fear partner) 3.4% (physical) 5.3% (physical)	No
Johnson et al. (2003)	17% (emotional, physical) "in the past"	...	...	No
Saltzman et al. (2003)	...	7.2% (physical) 12 months before pregnancy	5.3% (physical)	No
Bacchus et al. (2004)	23.5% (physical, abused) "ever physically hurt or abused"	10.6% (physical) 12 months before pregnancy	3% (physical) 1% (sexual)	No
Dunn and Oths (2004)	...	15.0% (physical) 12 months before pregnancy	10.9% (physical)	No
Guo et al. (2004)	...	8.5% (physical, sexual) 4.2% physical 5.8% sexual 12 months before pregnancy	3.6% (physical, sexual) 1.3% physical 2.8% sexual	7.4% (physical, sexual) 3.8% physical 4.9% sexual Ave. 11 months postpartum
Heaman (2005)	36.7% (emotional, physical) "ever"	9.1% (physical) 1.9% (sexual)	5.7% (physical)	No
Yost et al. (2005)	...	...	0.9% (physical) 5.1% (verbal)	No
Charles and Pereira (2007)	...	33% (emotional, physical, coercin-control) During and/or after pregnancy	1.7% (physical) 7.5% (emotional)	17.3% (emotional) 3.1% (physical) 21.4% (coercin-control) At 1 year postpartum
Díaz-Olavarrieta et al. (2007)	41% (physical, sexual)	11.1% (physical and/or sexual)	7.6% (physical and/or sexual) 6.7% (physical) 1.8% (sexual)	No
Farid et al. (2008)	28.4% (physical) 49.8% (emotional) "during marriage"	...	12.6% (physical) 43.2% (emotional)	No
Thananowan and Heidrich (2008)	14.3% (emotional, physical)	9.9% (physical) 4.8% (sexual)	4.8% (physical)	No
Perales et al. (2009)	45.1% (any) 28.4% emotional 34.2% physical 8.7% sexual	...	21.5% (any) 15.6% emotional 11.9% physical 3.9% sexual	No

Notes: Ellipses indicate that data were not available.

^a Although Leung et al. (1999) reported a physical violence prevalence of 4.3%, the type of physical violence reported was limited to threats of physical violence with only a single case of slapping reported by the sample.

^b Shumway et al. (1999) used mutually exclusive categories of violence based on the severity of violence experienced (no violence, negative verbal interactions, moderate physical violence, and severe physical violence).

^c Only one of the two data collection sites in the Janssen et al. (2003) study assessed the prevalence of pre-pregnancy violence (0.9% reported physical violence and 1.3% reported fear of a partner before the current pregnancy in the BC Women's Hospital's sample); pre-pregnancy violence was not assessed in the St. Paul's Hospital sample.

Table 2

Study characteristics of research examining violence against pregnant women.

Author(s) (year)	No. included/no. eligible (resp. rate)	Setting	Age (in years)	Race/ethnicity	Socioeconomic status	Marital status
Curry (1998)	<i>n</i> = 1937 (not specified)	6 prenatal clinics; large Northwestern city	Mean 23 Range 13–43 30% 13–19	58.0% White 26.6% African American 4.9% Hispanic 11.6% other	79% Medicaid eligible	56% live with spouse/partner
Leung et al. (1999)	631/631 (all pregnant women)	Antenatal clinic; Hong Kong Aug 11–Nov 3/98	Mean 29.4	85.6% Chinese 14.4% non-Chinese	41.7% unemployed/homemaker (wife) 48.0% unemployed/manual worker (male) 32.4% < high school; 44.0% in lowest income quintile	93.3% married 6.7% single/divorced/widowed
Muhajarine and D'Arcy (1999)	543/728 (74.6%)	Public prenatal health care service; Saskatoon, SK Apr 1/93–Mar 31/94	Mean 24.6 Range 15–40	66.6% English/French 16.8% First Nations or Métis 16.6% mixed/immigrant		69.4% married/common-law 30.6% not married
Shumway et al. (1999)	401/594 (67.5%)	Adult obstetrical clinic; Baltimore, MD Dec 89–Sept 90	28% 18–19 41% 20–24	90% African American 9% Caucasian 1% other	62% < \$10,000 total annual income; Mean education 11.4 years	11% married
Covington et al. (2001)	554/613 (90.4%)	Maternity care program county health dept.; North Carolina Apr 1994–Apr 1996	Mean 22.3	50.7% White 47.8% African American 1.5% other	37.2% < high school 42.4% high school 20.4% some college	76.5% not married
Janssen et al. (2003)	4750/9794 (48.5%)	Presenting for delivery at 2 hospitals; Vancouver, BC Jan 1/99–Dec 31/00	1.9% ≤ 19 32.9% 20–29 65.2% ≥ 30	42.1% White 37.2% East Asian 7.7% South Asian 2.4% First Nations 10.6% other	34.3% in lowest income quintiles	6.5% lone parent
Johnson et al. (2003)	475/500 (95%)	Antenatal clinic, first prenatal visit; north of England hospital	13.0% ≤ 20 59.9% 21–30 27.1% > 30	Not specified	Not specified	45.2% married 28.5% stable relationship 22.2% single 67.5% married
Saltzman et al. (2003)	<i>n</i> = 64,994 (70% or higher from each state)	PRAMS ^a data from 16 states ^b , 1996–1998	44.0% 20–29	76.6% White 19.4% Black 10.8% Hispanic 4.0% other	79.9% high school; 41.5% Medicaid recipients	
Bacchus et al. (2004)	200/1198 (16.7%)	Antenatal/postnatal wards, teaching hospital; London July 01–Apr 02	Mean 30.6 Range 17–44	56% White	63.5% paid employment or maternity leave	80% married
Dunn and Oths (2004)	<i>n</i> = 439 (66% average)	4 public/private clinics; Alabama Mar 1993–May 1996	Mean 24.4 Range 20–34	49.4% Black 48.1% White 2.5% other	75.9% ≥ high school; 59.5% employed; 81.5% Medicaid recipient \$1404 (mean income/month)	41.2% married
Guo et al. (2004)	12,044/13,294 (90.6%)	32 communities in 6 Chinese provinces Nov 1/01–Feb 28/02	Mean 27.6 Range 19–45	Not specified	Ave. education 12.2 years (wife) Ave. education 12.7 years (husband)	64.1% nuclear family 35.2% extended family 0.6% lived alone
Heaman (2005)	680/684 (99.4%)	2 tertiary care hospitals; Winnipeg, MB Oct 99–Dec 2000	Mean 27.2 Range 14–45	51.8% White 37.6% Aboriginal 7.1% Asian 3.5% other	31.9% < high school; 34.2% < \$20,000 annual income	55.9% married 24.4% common-law 16.8% single 2.9% sep/div/widow
Yost et al. (2005)	15,947/16,041 (99.4%)	Labor and delivery unit of hospital; Texas Dec 6/00–Mar 31/02	6.6% ≤ 15 23.8% ≥ 35	84.2% Hispanic 12.2% African American 2.4% White 1.2% other	Medically indigent population	Not specified
Charles and Perreira (2007)	87% married/82% unmarried mothers	Nat. representative of 16 U.S. cities w/ 200,000+ population; Fragile Families Study ^c , 1999	Mean 26.8	36.6% White 25.2% Black 30.8% Hispanic 7.4% other	32.7% < 12 years 25.4% 12 years 41.9% ≥ some college; 25.6% welfare recipient	59.5% married 24.5% cohabitating 12.6% romantically involved 3.4% single/uninvolved
Díaz-Olavarrieta et al. (2007)	313/1311 (23.8%) ^d	Prenatal services in 3 public hospital; Mexico City July 00–Jan 03	25.9% 13–19 29.9% 20–24 24.3% 25–29 20.0% ≥ 30	Not specified	22.7% 0–6 years ed 42.5% 7–9 years ed 34.8% ≥ 10 years ed; 84.9% homemakers	83.8% married/in union 4.7% separated/divorced 11.4% single/other
Farid et al. (2008)	<i>n</i> = 500 (not specified)	Obstetric wards in 4 tertiary care hospitals; Karachi, Pakistan	Mean 25	Not specified	38.4% post-secondary ed 32.8% primary-secondary 28.8% below primary ed; 95.8% housewife	Not specified ^e
Thananowan and Heidrich (2008)	475/487 (97.5%)	Antenatal clinics in 5 hospitals; Bangkok, Thailand	Mean 26.25 32.8% 20–24	96.4% Buddhist	36.2% some high school 38.7% high school/upper secondary graduates; 65% employed	96.6% married

(continued on next page)

Table 2 (continued)

Author(s) (year)	No. included/no. eligible (resp. rate)	Setting	Age (in years)	Race/ethnicity	Socioeconomic status	Marital status
Perales et al. (2009)	n = 2392 (99%)	Government-operated hospital delivery unit; Lima, Peru Aug 11/05–June 30/06	7.3% <20 62.1% 20–29 30.6% ≥ 30	Not specified	74.3% ≤ 6 years education 12.8% 7–12 years ed 12.9% more than 12 years	Not specified

^a The Pregnancy Risk Assessment Monitoring System (PRAMS) is a population-based self-report survey of maternal behaviors and experiences occurring before, during, and shortly after a woman's pregnancy.

^b States included in the Saltzman et al. (2003) study were Alabama, Alaska, Arkansas, Colorado, Florida, Georgia, Illinois, Louisiana, Maine, Michigan, New York, North Carolina, Oklahoma, South Carolina, Washington, and West Virginia.

^c The Fragile Families Study is a stratified random sample of 20 large US cities with a focus on births occurring in vulnerable population; weighted data are representative of US cities with populations over 200,000.

^d Although only 23.8% of the Díaz-Olavarrieta et al. (2007) completed all three interviews, data on the number of occurrences, the type of violence, and the relationship to the abuser were recorded at the first interview during pregnancy only and the study had a 99.8% initial response rate.

^e Although marital status is not explicitly stated in the Farid et al. (2008) study, all data refer to husbands and wives, which imply that the sample consisted entirely of married couples.

against pregnant women in developed nations, this review includes studies from both developed and less developed areas as well as studies measuring multiple forms of violence (i.e., physical, sexual, and/or emotional/verbal abuse). In the event that multiple studies used the same sample of women (e.g., multiple studies based on Pregnancy Risk Assessment Monitoring System [PRAMS] data), only the study using the widest range of data is included in the review. Prevalence rates of physical violence during pregnancy ranged from 0.9% to 30.0% (see Table 1), with 11 of the 18 studies that assessed physical violence separately reporting rates between 3.0% and 10.9% (Bacchus, Mezey, & Bewley, 2004; Covington et al., 2001; Curry, 1998; Díaz-Olavarrieta et al., 2007; Dunn & Oths, 2004; Heaman, 2005; Johnson, Haider, Ellis, Hay, & Lindow, 2003; Leung, Leung, Lam, & Ho, 1999; Muhajarine & D'Arcy, 1999; Saltzman, Johnson, Gilbert, & Goodwin, 2003; Thananowan & Heidrich, 2008). A number of studies also assessed emotional and/or verbal abuse during pregnancy with prevalence rates ranging from 1.5% to 36% (Charles & Perreira, 2007; Farid, Saleem, Karim, & Hatcher, 2008; Janssen et al., 2003; Perales et al., 2009; Shumway et al., 1999; Yost et al., 2005). Janssen et al. (2003) reported the lowest prevalence of emotional abuse (i.e., 1.5%), measured as fear of a partner, which may have contributed to the low prevalence reported in this study. Although most studies did not assess sexual violence during pregnancy, those that did reported prevalence rates of 1% to 3.9% (Bacchus et al., 2004; Guo, Wu, Qu, & Yan, 2004; Perales et al., 2009), which were lower than the rates of physical violence reported in each of the respective studies.

1.2.1. The prevalence of pregnancy violence in less developed nations

The prevalence rates of physical violence in less developed countries ranged from 1.3% to 12.6% (Díaz-Olavarrieta et al., 2007; Farid et al., 2008; Guo et al., 2004; Leung et al., 1999; Perales et al., 2009; Thananowan & Heidrich, 2008), which tend to represent both the lower and higher ranges of prevalence estimates. Two of the aforementioned studies were conducted in China (Guo et al., 2004; Leung et al., 1999) and there is some evidence to suggest that psychological abuse is the predominant form of violence experienced by Chinese women (Leung, Leung, Chan, & Ho, 2002; Leung et al., 1999; Leung, Wong, Leung, & Ho, 2001; Tiwari et al., 2005), which may partially explain the low prevalence of physical abuse in these samples of pregnant women. For example, although a 4.3% prevalence of physical violence was reported by Leung et al. (1999), acts of physical abuse were limited to threats of violence and only a single case of slapping was reported by the entire sample. Cultural differences and the degree of gender equality that exists in a society may contribute to the range of prevalence rates found throughout the developing world. In fact, it may be difficult to access accurate information concerning the prevalence of violence against pregnant women in certain regions of the world. An investigation conducted in Nigeria reported that 2.3%

of the sampled pregnant women had experienced physical, sexual, or emotional violence during pregnancy (Fawole, Hunyinbo, & Fawole, 2008). However, "women who expressed fear that the granting of the interview may result in *further* [italics added] violence were excluded from the interviews" (Fawole et al., 2008, pp. 406–407); the number of women who declined to participate was not provided in the article. In an investigation of the relationship between pregnancy violence and depression in Kuwait, 8.2% of the pregnant women sampled reported experiencing a physical assault (defined as an attack with a weapon, attacks without a weapon when the perpetrator was perceived as intending to injure the victim, or attacks that resulted in physical injury) in the 3 months prior to the interview (Nayak & Al-Yattama, 1999). However, these researchers were subject to a number of restrictions on their research and were not permitted to ask about the victim's relationship to the perpetrator, her age at the time of the incident, or sexual assault involving penetration. They also lacked an assessment of less severe forms of violence that may be common among pregnant women.

1.2.2. Methodological issues contributing to the range of prevalence estimates

A number of methodological issues may help to explain the range of prevalence rates found within the literature. Study characteristics of research examining violence against pregnant women are included in Table 2 and data collection and methodological characteristics of these studies are compared in Table 3. Similar to research conducted prior to 1996, the lowest prevalence rates of physical violence during pregnancy tend to be reported in population-based studies (Charles & Perreira, 2007; Janssen et al., 2003; Guo et al., 2004; Yost et al., 2005), and samples consisting of older, more affluent, and married women (Bacchus et al., 2004; Charles & Perreira, 2007; Janssen et al., 2003; Guo et al., 2004; Yost et al., 2005). Single item measures of physical violence (Charles & Perreira, 2007; Yost et al., 2005) and lower response rates (Bacchus et al., 2004; Janssen et al., 2003) also tend to be associated with low prevalence rates. As well, consistent with past research, higher prevalence rates tend to be reported in low age, low-income samples consisting primarily of unmarried women (Covington et al., 2001; Dunn & Oths, 2004; Shumway et al., 1999). Violence measures that include multiple items and report on a number of different types of violence tend to result in the highest prevalence rates (Covington et al., 2001; Farid et al., 2008; Perales et al., 2009; Shumway et al., 1999).

1.2.2.1. *Studies reporting lower prevalence rates in developed nations.* Janssen et al.'s (2003) population-based study conducted in British Columbia, Canada reported that 1.9% of their sample had experienced physical violence during pregnancy. However, 65.2% of their sample was age 30 or older and only 6.5% reported lone-parent status. Only

Table 3

Data collection and methodology in studies investigating violence against pregnant women.

Author(s) (year)	Data collection method	Period of observation	Violence measure (during pregnancy)	Perpetrator assessment
Curry (1998)	1 interview during routine prenatal visit	Varies (ave. 16 weeks gestation)	AAS ^a "Hit, slapped, kicked, shoved, or otherwise physically hurt"	"By someone"
Leung et al. (1999)	1 interview at first prenatal visit	Up to first prenatal visit	AAS ^a "Hit, slapped, kicked, or otherwise physically hurt"	Specify from list 77.8% husbands
Muhajarine and D'Arcy (1999)	2 interviews (initiation of care + late third trimester)	Up to late third trimester	AAS ^a "Hit, slapped, kicked, or otherwise physically hurt"	Specify from list 63.3% husband, boyfriend, or ex-husband
Shumway et al. (1999)	3 interviews during prenatal care	Up to third trimester (75% > 7.5 mos. pregnant)	CTS ^b – verbal aggression + minor and severe violence scales	"Someone close"
Covington et al. (2001)	Screened + 3 interviews (interviewed in each trimester)	Up to late third trimester	Screening – "hit, slapped, kicked, or hurt" Interviews – CDC ^c guidelines for moderate and severe violence	Specify from list 78.6% partner/ex-partner
Janssen et al. (2003)	Secondary analysis of medical/health records	Entire pregnancy	AAS ^a "Hit, slapped, kicked, or otherwise physically hurt" (fear of current/former partner also assessed)	Current or former intimate partner
Johnson et al. (2003)	Anonymous questionnaire at first prenatal visit	Up to first prenatal visit	AAS ^a (modified) "Physically hurt"	"Partner or someone close to you"
Saltzman et al. (2003)	Mailed out survey, 2–6 months postpartum	Entire pregnancy	"Pushing, hitting, slapping, kicking, or any other way of physically hurting someone"	Specify from list 75% husband/partner
Bacchus et al. (2004)	1 interview during prenatal visit or post-delivery	Varied	AAS ^a "Hit, slapped, kicked, or otherwise physically hurt"	"By someone"
Dunn and Oths (2004)	2 in-depth interviews (first and third trimesters)	Up to third trimester	AAS ^a (modified) "Hit, slapped, kicked, or hurt"	"By someone" 62% by current/former intimate partner
Guo et al. (2004)	Single community-based interview survey; 6–18 months postpartum	Entire pregnancy	Physical – beaten or pushed; hit with a fist; cut or burned; contusion, fracture, or trauma to head/internal organ; injured w/ tool or weapon Sexual – harassed/threatened/forced	All perpetrators were husbands
Heaman (2005)	Single interview in postpartum unit	Entire pregnancy	AAS ^a (modified) "Hit, slapped, kicked, or otherwise physically hurt"	"By someone"
Yost et al. (2005)	Single in-person interview post-delivery	Entire pregnancy	HITS ^d "Physically hurt, insulted or talked down to, threatened, screamed or cursed at"	"Partner or family member"
Charles and Perreira (2007)	2 interviews (within 3 days of delivery + 1 year postpartum)	Entire pregnancy	"Hit or slapped" (physical) + verbal aggression scale of CTS ^b (emotional)	"Partner with whom they are in an intimate relationship"
Díaz-Olavarrieta et al. (2007)	3 interviews; 1 in each trimester (1st interview in-person; 2nd and 3rd by phone or telegram)	Up to third trimester	AAS ^a "Hit, slapped, kicked, or otherwise physically hurt"	"By someone"
Farid et al. (2008)	Single interview at delivery	Entire pregnancy	Physical – slap, shake, kick, beat w/ fist or object strangle, burn, threatened w/ knife or gun Emotional – forced isolation, threats to harm loved one, induce fear through intimidation/gestures	Not specified ^e
Thananowan and Heidrich (2008)	Self-administered questionnaire during prenatal visit	Varied	AAS ^a "Hit, slapped, kicked or otherwise physically hurt"	Specify from list 78.3% husbands
Perales et al. (2009)	Interview w/ structured questionnaire after delivery	Entire pregnancy	Demographic Health Survey Questionnaire: Domestic Violence Module ^f	Not specified

^a Abuse Assessment Screen (AAS).^b Conflict Tactics Scale (CTS).^c The Centers for Disease Control and Prevention (CDC) guidelines categorize moderate violence as being threatened, slapped, pushed, or sexually abused; severe violence includes being hit, kicked, beaten, injured with a weapon, or injured in the abdomen.^d The Hurt Insulted Threatened Survey (HITS) is a previously validated instrument designed to identify female victims of domestic violence.^e Although the perpetrator was not explicitly specified in the Farid et al. (2008) study, all data refer to husbands and wives, which imply that the perpetrators were all husbands.^f Violence measures included assessments of moderately severe physical abuse (slapping, arm twisting, throwing things, pushing, and shoving), severe physical abuse (hitting with a fist, kicking, dragging or beating, choking or burning on purpose, and threatening/actual use of a weapon), sexual abuse (forcing respondent to have sexual intercourse or to perform sexual acts), and emotional abuse (doing something to humiliate the respondent or threatening the respondent/someone close to the respondent with harm).

women who were screened for violence when presenting for delivery were included in the analysis (48.5% of potential participants), which may also have impacted findings. That is, screening was only done in the absence of partners and other family members and it is conceivable that abusive men may be less likely to leave their partners alone, resulting in the failure to assess a number of women who may have experienced violence during pregnancy. Language barriers also prevented screening in a number of cases (up to 15% of the entire

sample), which may have also led to an under-reporting of abuse experiences if the non-screened women represented higher-risk populations such as immigrant women. Bacchus et al. (2004) reported that 3.0% of their sample reported experiencing physical violence during pregnancy. However, a low participation rate (16.7%) and sociodemographic characteristics of the resulting sample (mean age 30.6 years; 63.5% employed or on maternity leave; 80% married) may have contributed to the low prevalence rate reported. The low

participation rate in this study seriously limits the generalizability of its findings as the women who chose to participate shared many of the characteristics associated with a lower risk of violence (older, employed, married). It seems likely that the women most at risk for experiencing violence (younger, unemployed, unmarried) were the ones who declined participation, which may have resulted in under-reporting of pregnancy violence in this study. In addition, only a single interview was conducted and the interview may not have encompassed the entire pregnancy period. Charles and Perreira (2007) used a single item measure of physical violence during pregnancy (whether the respondent had been “hit or slapped”) and reported a physical violence rate of 1.7% during pregnancy. Most of the postpartum women included in their sample were married or in a common-law union (75%) and a substantial proportion (41.9%) reported at least some college education. Yost et al. (2005) reported a prevalence of 0.9% of physical violence during pregnancy in their sample of postpartum women; almost one-quarter of their sample was age 35 years or older. The measure used to assess violence was limited to a single item asking if the respondent had been “physically abused” during pregnancy. An interesting finding in the Yost et al. (2005) research was that women who declined to be interviewed had a significantly increased risk of a number of detrimental pregnancy outcomes compared to both the abused and non-abused comparison groups. The authors stated that “the women who remain silent when questioned about the subject [of violence during pregnancy] may, in fact, be speaking the loudest” (Yost et al., 2005, pp. 64–65).

1.2.2.2. Studies reporting lower prevalence rates in less developed nations. Guo et al. (2004) reported a physical violence during pregnancy prevalence rate of 1.3% in their population-based sample of Chinese women. However, this sample consisted of older, educated women (mean age 27.6 years; average education 12.2 years). The sample was generated from immunization records and did not include women who had not immunized their newborn, which may have impacted the results, particularly if abused women had more difficulty accessing health care services. In addition, these authors used a violence measure consisting of relatively severe items (see Table 3), which may have underestimated the true prevalence of physical violence in this population.

1.2.2.3. Studies reporting higher prevalence rates in developed nations. The highest reported prevalence rates of physical violence during pregnancy (13.5% in Covington et al., 2001; 30% in Shumway et al., 1999) utilized extremely detailed, multiple item violence measures in their analyses (the Center for Disease Control [CDC] guidelines for assessing violence and the Conflict Tactics Scale [CTS], respectively). Both of these investigations assessed both moderate and severe physical violence and screened women at multiple points throughout the entire pregnancy period. Sociodemographic characteristics of the respective samples may have also contributed to the higher prevalence of physical violence during pregnancy reported in these studies. Sixty-nine percent of Shumway et al.'s (1999) sample was less than 24 years of age (more than one-third of the sample were adolescents) and a significant proportion were African American (90%), unmarried (89%), low-income (62% had a total annual income of less than \$10,000 U.S. dollars), or less educated (mean education was 11.4 years) women. Similarly, Covington et al. (2001) utilized a sample from a high-risk population (Maternity Health Care Program) that included primarily young (mean age 22.3 years), unmarried (76%), and less educated (37.2% had less than a high school education) women.

1.2.2.4. Studies reporting higher prevalence rates in less developed nations. Two studies reporting higher prevalence rates were conducted in less developed areas, Karachi, Pakistan (Farid et al., 2008) and Lima, Peru (Perales et al., 2009), and both of these also used very detailed, multiple item abuse measures that encompassed the entire

pregnancy period. Contrary to findings in more developed nations, both of these investigations consisted of relatively higher mean age samples. Approximately one-third of Perales et al.'s (2009) sample was at least 30 years of age; and Farid et al. (2008) reported a mean age of 25 years in their sample of Pakistani women. Although 38.4% of the Pakistani women had some post-secondary education, 98.5% also reported being housewives, suggesting a certain degree of financial dependence on the male partner. These differences could represent the differential impacts various sociodemographic characteristics have on the risk of violence from an intimate partner in different cultural contexts.

1.2.3. The Abuse Assessment Screen (AAS)

1.2.3.1. The implementation of the AAS as a standardized measure.

The development and utilization of standardized measures of violence have been widely implemented since the Gazmararian et al. (1996) review, with the vast majority of studies reviewed above using some variation of the Abuse Assessment Screen (AAS; see Table 3). The AAS was developed by the Nursing Research Consortium on Violence and Abuse to be used as a screening tool to detect violence experienced by pregnant women (Parker & McFarlane, 1991). The AAS includes questions concerning the frequency and severity of violence, the perpetrator of the violence, and includes a body map to locate sites of injury. The questions related to the measures of violence are provided in Fig. 1. Detection rates of pregnancy violence have been shown to increase significantly when the AAS is used relative to non-structured, non-standardized routine interview techniques (Norton, Peipart, Zierler, Lima, & Hume, 1995). Criterion-related validity has been established when responses to questions 2, 3, and 4 are compared with scores on other validated instruments such as the CTS, the Index of Spouse Abuse (ISA), and the Danger Assessment Screen (DAS), with women responding positively to the aforementioned questions having significantly higher scores on the other instruments (McFarlane, Parker, & Soeken, 1995).

1.2.3.2. Limitations of the AAS. There is some indication that the AAS may fail to detect a number of items that are reported on the CTS. In a study comparing the AAS to the CTS2, approximately 40% of the items detected on the CTS2 were not detected by the AAS (Reichenheim & Moraes, 2004). Although most of the items the AAS failed to detect were part of the minor physical violence subscale of the CTS2, one-third of the missed items were considered severe acts of violence. A limitation of this study was that the AAS was administered before the CTS2 in the same sitting, which may have facilitated increased disclosure on the CTS2. However, the failure to identify women who are experiencing violence during pregnancy may have profound implications for both the woman's and her unborn child's health and well being. In a study conducted in rural Appalachia with a sample of third trimester pregnant women using the CTS2 as a violence measure, 79.8% reported psychological abuse, 27.9% reported physical abuse, 20.2% reported sexual violence, and 4.8% reported injuries in the 12 months prior to the interview (Bailey & Daugherty, 2007). Although both pregnancy and pre-conception periods are included in the prevalence rates, the reported rates are higher than past-year rates found in many studies using alternate measures, including the AAS (e.g., Bacchus et al., 2004; Díaz-Olavarrieta et al., 2007; Dunn & Oths, 2004; Heaman, 2005; Leung et al., 1999; Muhajarine & D'Arcy, 1999; Saltzman et al., 2003; Thananowan & Heidrich, 2008).

As one of the most widely used screening tools, the AAS does not include a preface or introduction (Espinosa & Osborne, 2002; Reichenheim & Moraes, 2004), which may hinder open communication regarding a sensitive topic such as the experience of violence during pregnancy. The AAS fails to distinguish between the different types of violence that may be experienced during pregnancy and the only specific type of violence measured during the pregnancy period is physical violence. Emotional abuse is measured in the context of

ABUSE ASSESSMENT SCREEN (Circle YES or NO for each question)

1. Have you ever been emotionally or physically abused by your partner or someone important to you? YES NO
2. WITHIN THE LAST YEAR, have you been pushed, shoved, slapped, hit, kicked or otherwise physically hurt by someone? YES NO
If YES, by whom (Circle all that apply)
Husband Ex-husband Boyfriend Ex-boyfriend Stranger Other Multiple
Total number of times _____
3. SINCE YOU'VE BEEN PREGNANT, have you been pushed, shoved, slapped, hit, kicked or otherwise physically hurt by someone? YES NO
If YES, by whom (Circle all that apply)
Husband Ex-husband Boyfriend Ex-boyfriend Stranger Other Multiple
Total number of times _____
4. WITHIN THE LAST YEAR, did anyone force you to have sexual activities? YES NO
If YES, by whom (Circle all that apply)
Husband Ex-husband Boyfriend Ex-boyfriend Stranger Other Multiple
Total number of times _____
5. Are you afraid of your partner or anyone listed above? . . YES NO

Fig. 1. Modified Abuse Assessment Screen (AAS).

lifetime prevalence only and sexual violence is measured only in the context of past-year abuse, confounding both the pregnancy and pre-pregnancy periods. In addition, although the AAS does provide some measure of the severity and chronicity of abuse, the failure to distinguish between moderate and severe forms of violence experienced during pregnancy may further confuse research investigating the effects of violence during pregnancy (Covington et al., 2001).

Although prevalence rates vary between studies, it is clear that a substantial minority of pregnant women experience violence during pregnancy and this violence often continues into the postpartum period (Guo et al., 2004; Martin, Mackie, Kupper, Buescher, & Moracco, 2001; Mezey & Bewley, 1997; Widding Hedin, 2000). For example, Martin et al. (2001) not only found a strong association between abuse before pregnancy and during pregnancy, but also a strong relationship between abuse during pregnancy and postpartum violence. Less than 1% of their sample experienced violence for the first time in the postpartum period. However, most studies do not follow the same sample of women into the postpartum period (for exceptions see Charles & Perreira, 2007; Guo et al., 2004; Martin et al., 2001). Research on the prevalence of different types of violence experienced over the course of the reproductive lifespan needs to be undertaken in order to more fully understand the patterns of violence against pregnant women.

2. Patterns of violence against pregnant women

The prevalence of violence during pregnancy is consistently lower than violence occurring before pregnancy across studies, both in developed (Bacchus et al., 2004; Bohn, Tebben, & Campbell, 2004; Charles & Perreira, 2007; Covington et al., 2001; Cox et al., 2004; Curry, 1998; Datner, Wiebe, Brensinger, & Nelson, 2007; Dunn & Oths, 2004; Gazmararian et al., 1996; Heaman, 2005; Janssen et al., 2003; Johnson et al., 2003; McFarlane, Parker, & Soeken, 1996; Muhajarine & D'Arcy, 1999; Renker & Tonkin, 2006; Saltzman et al., 2003; Shumway et al., 1999; Stewart & Cecutti, 1993; Yost et al., 2005) and less developed (Díaz-Olavarrieta et al., 2007; Farid et al., 2008; Guo et al., 2004; Leung et al., 1999; Nasir & Hyden, 2003; Perales et al., 2009; Thananowan & Heidrich, 2008) nations. In all of the literature reviewed, there was not a single study indicating that the prevalence of any type of violence was greater during the pregnancy period (see Table 3). In a population-based sample of 16 states, this relationship held across all characteristics

and subpopulations examined (Saltzman et al., 2003). Although the prevalence of violence against pregnant women is consistently lower than that of the pre-pregnancy period, the patterns of violence experienced by pregnant women remain an important avenue of research. Four different patterns of pregnancy violence have been identified: (a) violence starts (no abuse before pregnancy, but violence during pregnancy), (b) violence continues (violence both before and during pregnancy), (c) violence ceases (violence before pregnancy, but no violence during pregnancy), and (d) no violence either before or during pregnancy (Ballard et al., 1998).

2.1. Changing patterns of pregnancy violence

2.1.1. Past abuse as a predictor of pregnancy violence

One of the strongest predictors of pregnancy violence is a history of pre-pregnancy violence (Martin et al., 2001). Stewart and Cecutti (1993) reported that physical abuse before the current pregnancy significantly increased a woman's risk (relative risk [RR] = 17.15) for abuse during pregnancy relative to those without a history of abuse. Additionally, violent incidents in the three months prior to conception have also been shown to significantly increase the risk for pregnancy violence (odds ratio [OR] = 5.87; Amaro et al., 1990). An overview of the patterns of violence experienced by pregnant women in terms of whether the violence starts, continues, or ceases is provided in Table 4. Between 60% and 96% of women who are abused during pregnancy also report being abused in the past, suggesting that pregnancy violence represents a continuation preexisting violence for most pregnant victims. The range of estimates may be partially explained by the time frame included in the measure of past abuse; half of these studies assess past history of violence as abuse occurring in the 12 months prior to pregnancy (Dunn & Oths, 2004; Guo et al., 2004; Martin et al., 2001; Renker & Tonkin, 2006; Saltzman et al., 2003), while the others assess past history of violence as abuse occurring "before the current pregnancy" without specifying a perpetrator (Stewart & Cecutti, 1993) or "before the current pregnancy" by an intimate partner (Bohn et al., 2004; Helton et al., 1987; Janssen et al., 2003; Valladares et al., 2002). Both the highest (96.2% in Bohn et al., 2004; 87.5% in Helton et al., 1987; 86.1% in Stewart & Cecutti, 1993) and the lowest (60% in Valladares et al., 2002) estimates are found in studies using longer time frames, which may include either lifetime experiences of violence or different individuals as the perpetrators of

Table 4
Patterns of violence against pregnant women.

Author(s) (year)	Abused during pregnancy		Past history of abuse	
	Violence started, %	Past history of violence, %	Violence ceased, %	Violence continued, %
Helton et al. (1987)	12.5	87.5	52.3	47.7
Stewart and Cecutti (1993)	13.9	86.1	...	...
Martin et al. (2001)	29.0	71.0	45.8	54.2
Valladares et al. (2002)	40.0	60.0	...	...
Saltzman et al. (2003)	26.8	73.2	55.6	44.4
Bohn et al. (2004)	3.8	96.2	68.7	31.3
Dunn and Oths (2004)	18.8	81.2	40.9	59.1
Guo et al. (2004) ^a	23.0	77.0	67.4	32.6
Janssen et al. (2003) ^b	...	...	30.8	69.2
Renker and Tonkin (2006) ^c	30.8	69.2	39.4	60.6

Notes: Ellipses indicate that data were not available; all used measures of physical violence unless otherwise indicated.

^a Includes physical and sexual violence.

^b Includes physical violence and fear of partner.

^c Includes physical, sexual, and emotional abuse.

violence before and during pregnancy. Although the odds of experiencing violence at some point over the course of an entire lifetime are greater than the odds of experiencing violence in the past year only by virtue of the longer time frame, it is difficult to explain why the lowest estimate of past abuse (Valladares et al., 2002) also encompasses a longer time period. A substantially higher number of women reported that abuse started during pregnancy (40%) in Valladares et al. (2002) compared to the other studies that assessed a lifetime prevalence of pre-pregnancy violence (3.8%, 12.5%, and 13.9%, respectively) suggesting that pregnancy may be a particularly vulnerable period for Nicaraguan women. A past history of reported abuse seems to be less predictive of pregnancy violence in this particular sample of pregnant women. As well, cultural variations and distinctions between developed and less developed nations in patterns of violence may help to account for differences in estimates concerning the relationship between pre-pregnancy and pregnancy violence. The degree of gender inequality that exists within a society has been shown to have an impact on the rates of violence in the general population of women in cross-cultural research (Archer, 2006), and it is likely that this also has an impact at pregnant women. The status of women among different cultures, along with the status afforded to the mother-role, may play a role in the degree of acceptance and/or tolerance of pregnancy violence within a specific culture. As Campbell et al. (2004) have suggested, even though “cultural attitudes about pregnancy would seem to be relevant to abuse during pregnancy, they have not been measured in most research” (p. 776).

2.1.2. Pregnancy period: respite or risk?

Although the initiation of violence during pregnancy appears to be the least common pattern of violence against pregnant women, as shown in Table 4, it is clear that a substantial minority (between 3.8% and 40.0%) experience violence for the first time during pregnancy. For women with a past history of abuse, violence can either cease or continue at pregnancy onset. Of those reporting a past history of abuse, between 30.8% and 68.7% of pregnant women report that abuse stopped when they became pregnant, suggesting that pregnancy may be a protective factor for some women. Studies including some form of emotional abuse in their violence measure (i.e., Janssen et al., 2003; Renker & Tonkin, 2006) are more likely to report that abuse continues into pregnancy, which could be indicative of changing abuse patterns during pregnancy. There is some evidence suggesting that the type of violence experienced may change at pregnancy onset. For example, Martin et al. (2004) reported that pregnancy was associated with increased psychological and sexual abuse for women experiencing pre-pregnancy violence compared to women without a similar history.

Comparing women whose abuse continued into pregnancy to those whose abuse had ceased at pregnancy onset, Díaz-Olavarrieta et al. (2007) reported that women who had experienced continued violence were more likely to be homemakers (93.8% vs. 80.3%; Pearson's chi-square $p = 0.014$), to have a husband who lost his job (35.4% vs. 14.1%; Pearson's chi-square $p = 0.004$), and to have bills they could not pay (59.5% vs. 39.1%; Pearson's chi-square $p = 0.015$). These results suggest that financial difficulties and/or female financial dependency may contribute to the continuation of preexisting violence into the pregnancy period. However, little else is understood about what factors contribute to the varying patterns of violence against pregnant women or why pregnancy appears to be a protective period for some women while being a period of increased risk for others.

2.2. The nature of violence against pregnant women

2.2.1. The recurrent nature of pregnancy violence

There is some indication that violence during pregnancy may be recurrent. For example, McFarlane et al. (1996) found that 60% of women in their sample who experienced violence during pregnancy reported two or more episodes of violence. Valladares et al. (2002) reported that 15% of case mothers delivering low birth weight infants experienced three or more acts of physical violence during pregnancy. In an investigation of the relationship between pregnancy violence and substance abuse, 60% of the victims of pregnancy violence reported one incident, 25% reported two incidents, and 15% reported three or more incidents of violence during pregnancy (Amaro et al., 1990). In a study comparing abusive pregnant couples with non-abusive pregnant couples, Martin et al. (2004) found that abused pregnant women reported, on average, one violence-related injury per month. Furthermore, in a study investigating police-reported IPV during pregnancy, Lipsky, Holt, Easterling, and Critchlow (2005) found that although most pregnant women experienced a single police-reported incident, 9.5% of their sample experienced two incidents, and 2.6% experienced three or more incidents. Because this investigation focused on police-reported incidents only, it is likely that the violence experienced by these women was somewhat more severe than violence reported in self-report studies, as minor forms of violence are not as likely to garner police attention. Women may also experience violence in multiple pregnancies. In a representative sample of New Zealand women who had ever been pregnant, 59% reported that they had experienced violence during one pregnancy, 15% in two pregnancies, 11% in three pregnancies, and 15% had experienced violence in four or more pregnancies (Fanslow, Silva, Robinson, & Whitehead, 2008).

2.2.2. Changes in the frequency and severity of pregnancy violence

Few studies have investigated how abuse patterns change with the onset of pregnancy. Findings of research investigating changes in the frequency and/or severity of violence experienced during pregnancy are provided in Table 5. Women who are abused during pregnancy have reported both increased frequency and severity of abuse compared to abused women who are not pregnant (Campbell, Oliver, & Bullock, 1993; McFarlane et al., 1995). Research has indicated that between 13% and 71% of women who are abused both before and during pregnancy report an increase in the frequency and/or severity of violence at pregnancy onset (see Table 5), with most studies reporting approximately one in every five victims experienced an increase in violence during pregnancy (Berenson et al., 1992; Farid et al., 2008; Helton et al., 1987; Hillard, 1985; Saltzman et al., 2003). Stewart and Cecutti (1993) found that 63.9% of the sampled women with histories of abuse both before and during pregnancy reported that the abuse worsened in pregnancy and 30.6% reported that it remained the same. Only 5.6% of the pregnancy violence victims reported that they experienced less violence while pregnant than they did prior to pregnancy onset. Hillard (1985) found that of the women reporting abuse during the current pregnancy, 36% reported

Table 5

Changes in the frequency and/or severity of violence during pregnancy.

Author(s) (year)	Violence decreased, %	Violence same, %	Violence increased, %
Hillard (1985)	36.0	43.0	21.0
Helton et al. (1987)	...	...	29.1
Berenson et al. (1992)	...	...	21.7
Stewart and Cecutti (1993)	5.6	30.6	63.9
Valladares et al. (2002)	...	...	13.0
Saltzman et al. (2003)	48.5	30.8	20.8
Díaz-Olavarrieta et al. (2007)	...	...	71.0 ^a
Fanslow, Silva, Robinson et al. (2008)	26.0	54.1	19.7
Farid et al. (2008)	...	...	17.0

Note: Ellipses indicate data were not available.

^a Although 71% of the women reported an increase in the severity of violence since becoming pregnant, reports of increased severity did not correlate with indicators of severity reported on Hudson Partner Abuse Scale.

a decrease in violence, 43% reported the abuse was the same, and 21% reported an increase in violence since becoming pregnant. In a Nicaraguan study, 40% of the women who had experienced violence during pregnancy reported that the abuse began during the current pregnancy and 13% reported that the abuse worsened during pregnancy (Valladares et al., 2002).

Finally, in a representative sample of New Zealand women who had ever been pregnant, 19.7% reported that violence worsened during their last pregnancy and 54.1% reported that it was about the same as before (Fanslow, Silva, Robinson et al., 2008). This investigation used a relatively severe measure of violence (i.e., “beaten or physically assaulted by any partner while pregnant”) (Fanslow, Silva, Robinson et al., 2008, p. 399) and indicates that pregnancy not only failed to provide a respite from violence for a substantial proportion of New Zealand women, but almost three-quarters of the women with histories of violence experienced relatively severe violence during their last pregnancy.

2.2.3. Self-reported experiences of pregnancy violence

Díaz-Olavarrieta et al. (2007) reported that 71% of their sample with histories of abuse both before and during pregnancy reported an increase in the severity of violence since becoming pregnant (69.4% reported an increase in the severity of physical abuse and 47.8% reported an increase in sexual abuse). However, the women's reports of increased severity did not correspond to scores on severity scales. The authors suggested that pregnant women might rate the experience of violence as more severe than violence experienced outside of pregnancy due to the potential negative effects on their unborn child. Furthermore, in a population-based sample based on PRAMS data from 16 states, 48.5% of the women with histories of physical abuse both before and during pregnancy reported that the abuse occurred less frequently, 30.8% reported that abuse occurred as frequently, and 20.8% reported that abuse occurred more frequently during pregnancy (Saltzman et al., 2003). Saltzman et al. (2003) concluded that reports of abuse escalation are not supported by research as they “often rely on anecdotal evidence or small samples with self-selected participants, and not on comparisons of pregnant women to women who are not pregnant” (Saltzman et al., 2003, p. 36). However, it is clear that a substantial number of women experience the same, if not increased, levels of violence during pregnancy.

2.2.4. Indicators of severity

Stewart and Cecutti (1993) reported that 66.7% of women abused during pregnancy sought medical treatment for the abuse and Helton et al. (1987) reported that 8 of the 24 sampled women who experienced physical abuse during pregnancy sought medical treatment for injuries sustained. Poole et al. (1996) reviewed medical records of pregnant women treated for physically traumatic events ($n = 203$) over a nine-year period at the University of Mississippi Medical Center. They reported that 51 pregnant women were victims of intentional

blunt trauma and an additional 13 had experienced penetrating trauma including gunshot wounds, shotgun blasts, and stabbings; the majority of whom were victimized by a husband or boyfriend (88% of the cases with a known perpetrator). This is likely an underestimate as many “who claimed to have fallen incurred their injuries under suspicious circumstances and might have been pushed or shoved but were unwilling to admit the true circumstances leading to their hospital admission” (Poole et al., 1996, pp. 1874–1875). Conversely, Heaman (2005) found that women abused during pregnancy were no more likely to have one or more hospitalizations during pregnancy compared to non-abused pregnant women.

2.2.5. The risk for severe violence

IPV during pregnancy appears to be a risk factor for severe violence. In a sample of men convicted of spousal assault, male-reported frequency and severity of violence scores and injury frequency and severity scores were almost double for violence directed at partners who were pregnant compared to non-pregnant partners; these scores were even higher for violence directed at previous pregnant partners compared to previous non-pregnant partners (Burch & Gallup, 2004). IPV during pregnancy is one of the leading causes of maternal death (Martin et al., 2007; McFarlane, Campbell, Sharps, & Watson, 2002), although a significant proportion of femicide victims may not be included in official maternal death statistics (Krulwich, Pierre-Louis, de Leon-Gomez, Guy, & Green, 2001). Women who are abused during pregnancy may be at increased risk for attempted and completed femicide; with the odds of becoming a femicide victim three-fold higher for those who experienced violence during pregnancy (McFarlane et al., 2002). Krulwich, Roberts, and Thompson (2003) found that the rate of homicide was nearly double for pregnant compared to non-pregnant victims, with adolescent homicide victims 3.7 times more likely to be pregnant than adult homicide victims. In an investigation of violent maternal deaths in North Carolina, 62 women died of external causes while pregnant or within 1-year postpartum (Parsons & Harper, 1999). Of these women, 22 were victims of homicide and only traffic accidents claimed more victims ($n = 23$). It is worth noting that even though a substantial proportion of femicide victims saw their health care provider in the year prior to their death (Martin et al., 2007), most service providers were unaware of the violence these victims experienced in their lives prior to their death (Martin et al., 2007; McFarlane et al., 2002; Parsons & Harper, 1999).

Based on the discussion above, it is evident that a substantial number of women experience violence during pregnancy, which poses a risk to both the victim and her unborn child. Research on the patterns of violence against pregnant women and the potential severity of this violence highlight the need to better understand factors that contribute to an increased risk of violence during pregnancy.

3. Risk factors for violence during pregnancy

A number of studies have attempted to determine the risk factors associated with experiencing violence during pregnancy (e.g., Bohn et al., 2004; Campbell et al., 1992; Dunn & Oths, 2004; Lipsky et al., 2005; McFarlane et al., 1995; Muhajarine & D'Arcy, 1999; Saltzman et al., 2003; Stewart & Cecutti, 1993). In order to understand the underlying causes of pregnancy violence, research needs to determine whether a set of unique risk factors exists that make specific women especially vulnerable for experiencing violence during pregnancy. Risk factors that have been studied can be divided into victim-related characteristics, perpetrator-related characteristics, and pregnancy-related factors.

3.1. Victim characteristics

A number of victim-related characteristics have been investigated in the extant literature as they pertain to the risk of experiencing

pregnancy violence. These characteristics include age, marital status, race/ethnicity, education, employment, and a variety of other socio-economic (SES) indicators. Pregnant women's substance use has also been assessed in a number of studies. However, whether substance use contributes to, or is a consequence of, the violence experienced by pregnant women remains unresolved in the extant literature.

3.1.1. Age

3.1.1.1. Young age. A number of studies have shown that a relationship exists between young age and an increased risk of violence during pregnancy (Bohn et al., 2004; Cokkinides et al., 1999; Curry, 1998; Dunn & Oths, 2004; Farid et al., 2008; Janssen et al., 2003; Jasinski & Kaufman Kantor, 2001; Heaman, 2005; Muhajarine & D'Arcy, 1999; Parker, McFarlane, Soeken, Torres, & Campbell, 1993; Parker et al., 1994; Saltzman et al., 2003; Stewart & Cecutti, 1993; Thananowan & Heidrich, 2008). However, most of these studies involve clinic- or hospital-based samples rather than population-based samples and, therefore, remain limited in their generalizability. In a population-based sample of 16 states, Saltzman et al. (2003) found that women less than 20 years of age had 4.3 times the risk of experiencing violence during pregnancy compared to women more than 30 years of age; however, this study was limited to bivariate analyses.

Although the relationship between age and an increased risk of pregnancy violence is significant in bivariate analyses, the association often becomes non-significant once age is controlled in multivariate analyses (e.g., Bohn et al., 2004; Dunn & Oths, 2004; Farid et al., 2008; Gelles, 1988; Heaman, 2005; Janssen et al., 2003; Muhajarine & D'Arcy, 1999). Analyzing data from the Second National Violence Survey, Gelles (1988) found that pregnant women experienced minor (28.3% increased risk), severe (60.6% increased risk), and overall violence (35.6% increased risk) at higher rates than non-pregnant women. However, once age was controlled in the analyses, these differences were greatly reduced or disappeared, with the only exception being males 25 years of age or older reporting increased levels of violence towards pregnant wives compared to men 25 years or older with non-pregnant wives. Gelles (1988) concluded that the relationship between age and pregnancy violence is spurious as women under 25 years of age are both more likely to be abused and more likely to be pregnant. Additionally, a few studies have reported no association between age and the risk pregnancy violence (Amaro et al., 1990; Bacchus et al., 2004; Díaz-Olavarrieta et al., 2007; Fanslow, Silva, Robinson et al., 2008). Therefore, it remains unclear as to whether or not age is associated with increased risk for violence during pregnancy, or as Gelles (1988) suggests, that the relationship is spurious.

3.1.1.2. Comparing adolescent and adult women. Berenson et al. (1992) stated that adolescents might report a higher prevalence of pregnancy violence due to the fact that many still live at home and are at risk of being hit by both parents and intimate partners. In a sample of pregnant adolescents who experienced violence during pregnancy, 22% were abused by members of their family of origin only, 52% were abused by their mates only, and 22% were abused by both family members and mates (Berenson et al., 1992). Parker et al. (1994) found that adolescents were significantly more likely to report pregnancy violence than adult women (20.6% vs. 14.2%). Although teenagers reported a higher prevalence of violence, adult women reported more severe physical and emotional abuse, which may suggest that "adult women are more likely to be 'trapped' in relationships with significant ongoing physical and emotional abuse" (Parker et al., 1994, p. 327). Thus, while research seems to indicate that adolescents report a higher prevalence of pregnancy violence, this could be attributable to the fact that they are exposed to violence from multiple perpetrators to a greater extent than adult

women. Also, there is some indication that adult women may experience more severe forms of violence during pregnancy. Future comparisons of pregnant adolescents and adult women should clearly differentiate violence perpetrated by partners and violence perpetrated by others as well as include measures of severity to better understand and compare the experiences of these two groups of women.

3.1.2. Marital status

3.1.2.1. Single marital status. Single marital status may be associated with an increased risk for experiencing violence during pregnancy (Charles & Perreira, 2007; Dunn & Oths, 2004; Janssen et al., 2003; Heaman, 2005; Leung et al., 1999; Lipsky et al., 2005; Martin et al., 2004; Muhajarine & D'Arcy, 1999; Saltzman et al., 2003; Stewart & Cecutti, 1993; Thananowan & Heidrich, 2008); although some of these studies found that the association was no longer significant when controlling for other variables (Amaro et al., 1990; Dunn & Oths, 2004; Muhajarine & D'Arcy, 1999). Heaman (2005) reported that single pregnant women were more than three times as likely (adjusted odds ratio [aOR] = 3.41) to experience violence compared to married pregnant women. However, both women experiencing violence in the year prior to delivery and those abused during pregnancy were included in the abused group, so it is unclear whether the increased risk can be linked directly to violence occurring while the women were pregnant. As well, the violence measure used in this study assessed violence perpetrated "by someone" rather than by an intimate partner, so it is unclear whether the increased risk associated with single marital status was related to violence perpetrated by intimate partners or to violence perpetrated by others.

Although Charles and Perreira (2007) found no significant difference in the risk for pregnancy violence between married and cohabitating couples, single or uninvolved women had four times the risk of violence during pregnancy compared to married couples even after adjusting for a number of confounding factors. In a study examining police-reported IPV during pregnancy, Lipsky et al. (2005) found that unmarried women were more than twice as likely (aOR = 3.41) to report physical violence to the police during pregnancy than married women. However, the results of this study cannot be generalized to those women who may have experienced violence but did not report this violence to the police. Although Fanslow, Silva, Robinson et al. (2008) found that married or cohabitating women were 1.8 times more likely to report having ever experienced violence during pregnancy compared to women not living with a partner, marital status was assessed at the time of the survey rather than at the time in which the violence actually occurred.

3.1.2.2. Separated and divorced pregnant women. Women may be at an even greater risk if they separate or divorce while pregnant. Saltzman et al. (2003) reported that unmarried status increased the risk of violence during pregnancy (RR = 3.8; 95% Confidence Interval [CI] = 3.4–4.3); however, the risk was even greater if the women separated or divorced while pregnant (RR = 5.3; 95% CI = 4.7–5.9). The post-separation period may be particularly important because research has suggested that abused pregnant women who are at the greatest risk for homicide may be more likely to leave their partners once they become pregnant compared to pregnant women with lower risk of homicide assessments (Decker, Martin, & Moracco, 2004).

3.1.3. Race/ethnicity

There are inconsistent findings in the literature regarding the relationship between race/ethnicity and IPV during pregnancy, with some studies reporting a relationship between minority status and an increased risk for pregnancy violence (Charles & Perreira, 2007; Fanslow, Silva, Robinson et al., 2008; Heaman, 2005; Janssen et al., 2003; Lipsky et al., 2005; McFarlane et al., 2002; Muhajarine & D'Arcy,

1999; Saltzman et al., 2003) and others finding no association between the risk for pregnancy violence and race/ethnicity (Amaro et al., 1990; Campbell et al., 1993; Cokkinides et al., 1999; Helton & Snodgrass, 1987; Stewart & Cecutti, 1993).

3.1.3.1. Minority status. Charles and Perreira (2007) found that Black and Hispanic mothers reported significantly higher rates of physical and emotional abuse during pregnancy (males and female reports combined) compared to White mothers. After controlling for a number of confounding variables, only Hispanic women (and men) remained at an increased risk of violence during pregnancy ($aOR = 1.4$). McFarlane et al. (2002) reported that Black women had a three-fold increase in the risk of pregnancy violence compared to White women. However, because this investigation concerned abuse during pregnancy and the risk for homicide, findings may not be applicable to the general population of pregnant women. In a population-based sample, Black women were 2.1 times more likely and Hispanic women were 1.3 times more likely to be abused during pregnancy than White women; however, this study was confined to bivariate analyses and did not control for potential confounders (Saltzman et al., 2003). A higher rate of police-reported IPV has been found among African American, Native American, and Hispanic women (Lipsky et al., 2005). The authors suggested that the higher rates of violence during pregnancy reported by minority women might be because they may be more likely to report IPV to the police or to become involved with police than White women.

3.1.3.2. Aboriginal women. Aboriginal women have been found to be at an increased risk for experiencing violence during pregnancy compared to their non-Aboriginal counterparts in Canada (Heaman, 2005; Janssen et al., 2003; Muhajarine & D'Arcy, 1999). In a New Zealand sample, Maori women were three times more likely to have ever experienced violence during pregnancy (22%) than women of European descent (5.5%), Pacific women (7.3%), or women of other ethnicities (Fanslow, Silva, Robinson et al., 2008). In this sample, Asian women reported the lowest prevalence of having ever experienced pregnancy violence (0.6%).

3.1.3.3. Inconsistent findings regarding race/ethnicity. In an ethnically stratified sample of pregnant women using a public prenatal care clinic, White women experienced the greatest number of abuse episodes, followed by Hispanic women, and then African American women, who experienced the fewest episodes (McFarlane et al., 1995; 1996). In addition, White women reported the most severe violence compared to both Hispanic and African American women. Although Bohn et al. (2004) reported that, of the six ethnic groups studied (African America, White, Mexican/Mexican American, Cuban American, Puerto Rican, and Central American), African American and Puerto Rican women reported the highest incidence of abuse; no significant differences were found in the prevalence of abuse during pregnancy among women from different ethnic groups. In an investigation comparing Hispanic and White women, bivariate analyses showed that pregnancy was associated with minor assaults among Hispanic women and severe assaults among White women (Jasinski & Kaufman Kantor, 2001). However, after controlling for a number of factors in multivariate analyses, pregnancy status had no direct effect on the risk for violence for either group of women. Thus, the association between race/ethnicity and violence during pregnancy remains unclear in extant research. However, there has been some evidence to suggest that the increased prevalence rates of pregnancy violence reported by minority women may be associated with socio-economic disadvantage, which may be a more accurate indicator of risk, rather than race/ethnicity per se (Lipsky et al., 2005).

3.1.4. Employment

3.1.4.1. Female employment status. A number of studies have investigated the association between women's employment status and the risk for violence during pregnancy, with some studies finding

unemployed status to be associated with an increased risk of violence (Heaman, 2005; Stewart & Cecutti, 1993; Thananowan & Heidrich, 2008) and others finding no association between employment status and risk for violence (Amaro et al., 1990; Bohn et al., 2004; Díaz-Olavarrieta et al., 2007; Dunn & Oths, 2004; Helton et al., 1987; Leung et al., 1999; Martin et al., 2004). However, studies reporting an association between unemployed status and an increased risk for pregnancy violence are often confined to descriptive analyses (Stewart & Cecutti, 1993; Thananowan & Heidrich, 2008), which fail to account for potential confounders. Heaman (2005) found that the association between having a paid job and a decreased risk for pregnancy violence disappeared in an adjusted model. Although Bohn et al. (2004) found no direct relationship between experiencing abuse during pregnancy and employment status, once teenagers were removed from the analysis, a significant relationship emerged for current abuse status with employed women having significantly lower rates of abuse (11.7%) than either students (18.7%) or unemployed women (18.2%). In a sample of pregnant women in Lima, Peru, employed women were at greater risk of pregnancy violence ($aOR = 1.98$) than unemployed women (Perales et al., 2009). The authors noted that this finding is consistent with research conducted in other patriarchal cultures where female financial independence has been associated with an increased risk for IPV.

3.1.4.2. Male employment status. Most studies have not investigated the relationship between the male partner's employment status and the risk for perpetrating violence during pregnancy (Bohn et al., 2004; Dunn & Oths, 2004; Heaman, 2005; Helton et al., 1987; Stewart & Cecutti, 1993). In two studies that did investigate this relationship, male unemployed status emerged as a significant predictor for perpetrating violence against pregnant women (Leung et al., 1999; Martin et al., 2004). On the other hand, Díaz-Olavarrieta et al. (2007) found no association between the risk of pregnancy violence and the occupational category of the male partner. However, employment categories were extremely limited in this analysis ("student/other" or "worker" were the only two categories available to respondents), which may have had an impact on results.

3.1.5. Education

3.1.5.1. Lower educational status. There are inconsistent findings in the literature regarding the relationship between education and the risk for violence during pregnancy. Saltzman et al. (2003) reported that women with less than 12 years of education were 4.7 times more likely to experience violence during pregnancy than women with more than 12 years of education. In a Canadian study, women failing to complete high school were at an increased risk for violence during pregnancy ($RR = 9.2$) compared to those who had completed high school (Stewart & Cecutti, 1993). Among pregnant Thai women, physical and emotional abuse during pregnancy was significantly related to lower educational status (Thananowan & Heidrich, 2008). However, these studies confined their analyses to bivariate tests of association and a number of studies found that this association disappeared in adjusted models (Dunn & Oths, 2004; Farid et al., 2008; Heaman, 2005; Muhajarine & D'Arcy, 1999).

Additionally, several studies report no significant difference in the risk for pregnancy violence based on varying degrees of educational attainment (Amaro et al., 1990; Campbell et al., 1992; Díaz-Olavarrieta et al., 2007; Fanslow, Silva, Robinson et al., 2008a; Perales et al., 2009). Conversely, Bohn et al. (2004) found that the only significant predictor to emerge from backward multiple logistic regression analysis was less than a high school education. In a population-based sample of South Carolina women, women with less than 12 years education were significantly more likely to experience violence during pregnancy than women with more than 12 years education ($aOR = 1.8$; Cokkinides et al., 1999).

3.1.5.2. Methodological differences between studies examining education. Differences in sample selection and study design may account for some of

the variation in findings regarding education and the risk for violence during pregnancy. For example, [Dunn and Oths \(2004\)](#) reported that a lack of high school education was associated with an increased risk of violence during pregnancy in bivariate analyses but this association disappeared in multivariate analyses. However, the control group consisted of both non-abused women and women abused by non-intimate partners (38% of those who were abused during pregnancy), which may have had an impact on results especially because these two groups differed in terms of education levels. In addition, [Martin et al. \(2004\)](#) found that education levels significantly differed between women experiencing abuse during pregnancy and those who had not experienced abuse during pregnancy (74% of the abused women completed at least high school compared to 93% of the non-abused women). However, a number of the non-abused women who screened negative for abuse during pregnancy at the initial intake were later found to have experienced some forms of violence during their current pregnancy, which may have confounded the results. Furthermore, none of the aforementioned studies considered the male partner's education level in their analyses. Therefore, the relationship between education and risk for experiencing or perpetrating violence during pregnancy has yet to be determined.

3.1.6. Other socioeconomic indicators

3.1.6.1. Income level. There are inconsistent findings in the literature regarding the association between low income and violence during pregnancy. [Heaman \(2005\)](#) reported that women with low incomes were more likely to be abused during pregnancy; 61.1% of abused pregnant women had annual incomes less than \$20,000 (Canadian dollars) compared to 31.5% of the non-abused pregnant women. In a representative sample of New Zealand women, a negative relationship emerged between household income and violence during pregnancy; as household income increased, the risk of having ever experienced violence during pregnancy decreased ([Fanslow, Silva, Robinson et al., 2008](#)). [Muhajarine and D'Arcy \(1999\)](#) found that abused pregnant women were more likely to be in the lowest or lower-middle income quintile compared to non-abused pregnant women, although this relationship was no longer significant in a multivariate analysis. In a Pakistani sample, no significant difference in median household income was reported by women who were and were not abused during pregnancy ([Farid et al., 2008](#)). However, the authors acknowledge that their sample was relatively homogenous consisting primarily of low-income households, which may have masked any relationship between income and the risk for pregnancy violence. Finally, [Dunn and Oths \(2004\)](#) reported no significant differences in terms of income, employment status, or Medicaid recipient status between abused and non-abused pregnant women.

3.1.6.2. Proxy socioeconomic indicators. A number of studies use proxy measures of SES to assess the relationship between SES and the risk of violence during pregnancy. These studies suggest that low SES is associated with increased risk of pregnancy violence. For example, [Saltzman et al. \(2003\)](#) found that Medicaid recipients (a proxy measure of lower SES) were 4.2 times more likely to experience violence during pregnancy relative to non-Medicaid recipients and women using a public prenatal care provider were 2.1 times more likely to experience violence during pregnancy relative to women with a private prenatal care provider. However, this study confined analyses to bivariate tests of association. [Lipsky et al. \(2005\)](#) reported that accessing public health care benefits was an independent risk factor for police-reported IPV during pregnancy ($aOR = 1.33$). In a sample of pregnant women in Lima, Peru, difficulty accessing basic foods emerged as a significant predictor of pregnancy violence ($aOR = 1.76$; [Perales et al., 2009](#)).

3.1.6.3. Lifestyle instability. There is also some indication that lifestyle instability is related to violence during pregnancy ([Stewart & Cecutti, 1993](#)). [Heaman \(2005\)](#) reported that women were at an increased risk of violence if they moved more than two times in the past year ($aOR = 4.23$).

As well, [Campbell et al. \(1992\)](#) reported that women abused during pregnancy by intimate partners were most likely to have housing problems and to have fewer possessions than women reporting no abuse history, women abused before pregnancy only, and women abused by non-intimate partners. In an investigation of IPV during pregnancy in an emergency department, [Datner et al. \(2007\)](#) found that women abused during pregnancy were less likely to have permanent living arrangements than non-abused pregnant women. Finally, [Saltzman et al. \(2003\)](#) reported that homeless pregnant women were 4.5 times more likely to be abused during pregnancy than non-homeless pregnant women.

Overall, the inconsistent findings regarding the association between SES and the risk of violence during pregnancy suggest that further research is warranted to determine more precisely the effect of low SES on pregnancy violence.

3.1.7. Substance use

Violence during pregnancy has been associated with significant increases in the use of tobacco, alcohol, and/or illicit drugs ([Bailey & Daugherty, 2007](#); [Bullock, Mears, Woodcock, & Record, 2001](#); [Campbell et al., 1992](#); [Curry, 1998](#); [Datner et al., 2007](#); [Heaman, 2005](#); [Janssen et al., 2003](#); [Lipsky et al., 2005](#); [McFarlane et al., 1996](#); [Parker et al., 1994](#); [Stewart & Cecutti, 1993](#)); and this association has been reported to exist regardless of whether the violence experienced is physical or psychological in nature ([Bailey & Daugherty, 2007](#)). [Stewart and Cecutti \(1993\)](#) found that abused pregnant women were more likely to use both prescription ($RR = 1.84$) and non-prescription ($RR = 2.77$) drugs when compared to non-abused pregnant women. In addition, [Yang et al. \(2006\)](#) found that physically abused pregnant women were more likely to use minor tranquilizers to induce sleep or reduce pain, although this relationship was not statistically significant. The stress associated with experiencing violence during pregnancy may lead victims to initiate or sustain the use of various substances as a coping mechanism or as a means to self-medicate ([McFarlane et al., 1996](#); [Sales & Murphy, 2000](#)). In a qualitative, exploratory study of pregnant drug users who had experienced violence during pregnancy, [Sales and Murphy \(2000\)](#) found that drug use was both a survival strategy and a source of vulnerability for these women; "their drug use was directly associated with the violence. The more violence they endured, the more they used drugs; the more drugs they used, the more violence they experienced" (p. 701). Although the direction of the effect has yet to be determined, it may not be realistic to expect that women experiencing abuse during pregnancy will abstain from substances entirely because they cannot be expected to decrease or cease use until underlying stressors, including the violence that they are exposed to, are addressed ([Bullock et al., 2001](#); [Curry, 1998](#); [McFarlane et al., 1996](#); [Sales & Murphy, 2000](#)).

3.2. Perpetrator characteristics

In the literature, minimal attention is given to perpetrator characteristics that may impact the risk of violence and virtually no studies include the male partners' perspectives in their analyses (for an exception, see [Burch & Gallup, 2004](#)). The vast majority of existing research regarding perpetrator characteristics is based on retrospective reports from small samples of women who experienced violence during pregnancy.

3.2.1. Power and control

3.2.1.1. Male partners' controlling behavior. Violence may stem from the need to enforce power and control in a relationship and pregnancy may have a significant impact on the power dynamics of a relationship ([Bacchus, Mezey, & Bewley, 2006](#); [Pallitto et al., 2005](#)). However, there is little research on the impact of patriarchal dominance, in terms of power and control, on the risk of violence during pregnancy. [Decker et al. \(2004\)](#) found that 43% of women experiencing IPV during pregnancy reported that their partner controlled all their activities in the year before

pregnancy onset. Abusers tend to hold more conventional sex role attitudes and pregnancy-related factors (such as reduced mobility, increased tiredness, preoccupation with pregnancy, blocked free access to a woman's body, and a lack of emotional availability) may interfere with a woman's ability to perform her traditional role as homemaker/caretaker (Bacchus et al., 2006; Campbell et al., 1993; Jasinski, 2001; Pallitto et al., 2005; Noel & Yam, 1992), which may lead to an increased risk of violence. In an exploratory study comparing women who were abused during pregnancy to those who were abused outside of pregnancy only, power and control exerted by the male partner emerged as one of the major themes in the qualitative analysis (Campbell et al., 1993). Some of the women reported that the act of having a child with the abusive male partner was a means for the male partner to establish control in the relationship. On the other hand, pregnancy may symbolize increased control over the woman's own body and represent a degree of independence from her male partner. Thus, violence against the pregnant partner may represent a male partner's attempt to reassert control (Bacchus et al., 2006). McFarlane et al. (1995) found that women who were abused during pregnancy were more likely to report that their partners controlled them (34.4%) compared to women who were abused in the past year only (27.2%), although this difference was not statistically significant.

3.2.1.2. Financial dependence on the male partner. Pregnancy is associated with increased financial pressures and may increase a woman's financial dependency on her male partner (Bacchus et al., 2006; Noel & Yam, 1992; Pallitto et al., 2005; Sales & Murphy, 2000). Financial control by restricting access to money is a means to maintain control in a relationship (Pallitto et al., 2005) and this type of control has been reported by a number of women who have been abused during pregnancy (Bacchus et al., 2006; Pulido, 2001; Sales & Murphy, 2000). Xu et al. (2005) reported that women were at an increased risk of past-year IPV if they refused jobs due to a partner (OR = 2.53), their partner took away money (OR = 5.03), or their partner refused to give them money (OR = 4.33). In addition, for every unit increase in controlling behavior by the male partner, the risk for IPV increased. However, this study did not look at violence occurring specifically during pregnancy. Although there is some indication that an association between patriarchal dominance and the risk of violence during pregnancy exists, most evidence regarding this relationship involves qualitative, retrospective data from women who have experienced violence while pregnant without the benefit of a comparison group of women who have not experienced violence during pregnancy.

3.2.2. Substance abuse

3.2.2.1. Substance use and the perpetration of violence. Although, as identified above, a number of studies have documented that a relationship exists between women's alcohol and/or drug use and pregnancy violence, fewer studies have investigated how heavy drinking or illicit drug use by the male partner relates to the risk of perpetrating violence against a pregnant partner. In a Canadian study, Muhajarine and D'Arcy (1999) reported that women who had a partner with a drinking problem were more than three times as likely to be abused compared to women whose partner did not have a drinking problem; 51.6% of the abused pregnant women were coupled with a partner who had a drinking problem compared to only 7.4% of the non-abused pregnant women. In a sample of Mexican women, those who reported abuse during pregnancy were significantly more likely to be coupled with partners who drank (19.4%) than women who were not abused during pregnancy (7.7%; Diaz-Olavarrieta et al., 2007). McFarlane et al. (1995) found that women who were abused during pregnancy were significantly more likely to report that their partner was drunk every day (20.9%) compared to women abused in the past year only (12.3%). In an investigation of pregnant adolescents and their partners, frequent tobacco, alcohol, and/or marijuana use were significantly more prevalent in fathers who

assaulted their pregnant partners compared to fathers who did not assault their partners (Wiemann, Agurcia, Berenson, Volk, & Rickert, 2000). Male partner illicit drug use has also been found to significantly increase the odds of violence against a pregnant partner (Amaro et al., 1990; Charles & Perreira, 2007).

3.2.2.2. The impact of differences in measures of alcohol use.

Differences in findings regarding alcohol use may be partially attributable to the measure employed. Studies reporting a significant relationship ask about partners with a "drinking problem" (Muhajarine & D'Arcy, 1999) or partners who are "drunk everyday" (McFarlane et al., 1995), whereas studies reporting no association ask about "any drinking in the past three months" (Charles & Perreira, 2007), which may be too broad of a category to adequately assess the impact of alcohol use on the risk for perpetrating violence against a pregnant partner. In a small qualitative study, many of the respondents reported being assaulted when their partner was intoxicated and the violence escalated when their partners were drunk (Bacchus et al., 2006). However, it is important to note that violence was not confined only to periods of intoxication and all of the women also reported experiencing violence when their partner was sober.

3.2.3. Psychological and emotional abuse

The vast majority of women reporting physical violence during pregnancy are also victims of verbal abuse and psychological aggression (Bacchus et al., 2006; Campbell, 2002; Martin et al., 2004; Sales & Murphy, 2000; Stewart & Cecutti, 1993; Tiwari et al., 2008; Valladares et al., 2002). In fact, psychological abuse may be the predominant form of abuse during pregnancy in some cultures; studies investigating abuse during pregnancy in China have consistently found that emotional abuse and threats of violence are the most prevalent forms of abuse experienced by Chinese pregnant women (Leung et al., 2002; Leung et al., 1999; Leung et al., 2001; Tiwari et al., 2005). Women who are abused during pregnancy experience higher rates of psychological aggression both before and during pregnancy compared to non-abused women (Martin et al., 2004) and even low levels of psychological aggression during pregnancy are associated with an increased risk of depression in the postpartum period (Martin et al., 2006). Women who experienced psychological abuse during pregnancy, even in the absence of physical and/or sexual violence, have been shown to report significantly poorer mental health-related quality of life compared to women without a history of psychological abuse (Tiwari et al., 2008).

3.2.4. Social isolation

3.2.4.1. Socially isolated pregnant women at risk. Many women who are abused during pregnancy have reported that their partners attempt to socially isolate them from family, friends, and other social support systems (Bacchus et al., 2006; Noel & Yam, 1992; Pulido & Gupta, 2002; Sales & Murphy, 2000). Bacchus et al. (2006) found that abused pregnant women were isolated from family and friends and reported that their partners were jealous of other close relationships. These women were often prevented from going out, followed by partners when they were out, and interrogated upon return. Heaman (2005) found that women abused during pregnancy reported both lower support from others and lower support from partner scores compared to non-abused pregnant women. Abused pregnant adolescents were also more likely to report lower levels of social support from both partners and family compared to non-abused pregnant adolescents (Wiemann et al., 2000). Campbell et al. (1992) reported that women assaulted by a partner during pregnancy were the least likely to have received help from their families and had fewer people to go for help during pregnancy compared to non-abused women, women experiencing pre-pregnancy violence only, and women abused by non-intimate partners. Finally, Amaro et al. (1990) found that abused pregnant women were more likely to report a lack of

support during pregnancy (36%) compared to non-abused pregnant women (13%). Male partners' attempts to socially isolate their partners may decrease pregnant women's social support networks, an important protective factor, while at the same time increasing dependence on the male partner. Conversely, Charles and Perreira (2007) reported that social support had little influence on the risk of pregnancy violence on a number of social support measures including kin support (financial or in-kind assistance from family members), working in the previous year, attending religious services frequently, or having lived in one's neighborhood for less than 14 years. However, both female and male perpetrated violence during pregnancy were combined in the risk factor analyses and specific correlates increasing the risk for each gender were not analyzed separately.

The finding that social support had little impact on the risk for pregnancy violence could be due to gender differences in social support networks. Although the existence of a social support network may decrease the risk of violence for pregnant women (e.g., Farid et al., 2008; Muhajarine & D'Arcy, 1999), a male peer network that is tolerant of violence may actually increase the risk of perpetration among male partners (DeKeseredy, 1990). For example, association with peers who verbally endorse and behaviorally model dating violence has been shown to predict violent behavior among a sample of male university students (Williamson & Silverman, 2001). However, the potential relationship between male peer groups and the risk for violence has yet to be studied within the pregnancy context.

3.2.4.2. Social support as a protective factor. The existence of a social support network has been associated with a decreased risk of violence during pregnancy (Farid et al., 2008; Muhajarine & D'Arcy, 1999). For example, Muhajarine and D'Arcy (1999) found that the greater number of people with whom pregnant women could talk to about personal and private issues and could get together and have fun with was associated with a significant decrease in a pregnant woman's risk for violence. In a Pakistani sample, adequate social support from friends, family, and significant others decreased a woman's risk of experiencing violence during pregnancy ($aOR = 0.65$; Farid et al., 2008). Conversely, Dunn and Oths (2004) found no significant differences in the social support networks of abused and non-abused pregnant women, as measured by the mean number of individuals in the social network. However, they did find a strong significant association between faith as a source of support and a decreased risk of experiencing violence during pregnancy; the risk for violence was 3.4 times greater if faith was lacking. The authors hypothesized that an abusive partner may prevent his partner from attending religious services thereby decreasing a woman's social support network and increasing her dependency on the male partner.

3.3. Pregnancy-related factors

Pregnancy represents a unique period in a woman's reproductive lifespan and a number of pregnancy-related factors may have an impact on a pregnant woman's risk for violence.

3.3.1. Prenatal care

3.3.1.1. Late entry into prenatal care. Abuse during pregnancy has been associated with late entry into prenatal care (Bailey & Daugherty, 2007; Dietz et al., 1997; McFarlane et al., 1995; McFarlane et al., 1996; Pallitto et al., 2005; Parker et al., 1994; Perales et al., 2009), which may impact the developmental health of the unborn child. Dietz et al. (1997) reported that women who had experienced physical violence in the 12 months before delivery were 1.8 times more likely to have delayed entry into prenatal care (defined as entry after the first trimester or no prenatal care). This association was strongest for older, more affluent women. The authors speculated that this may be due to the fact that younger, less affluent women may have numerous other factors that

contribute to delayed entry into prenatal care (e.g., lack social support, transportation, or child-care problems) such that physical violence has no additional effect. On the other hand, it may be that older, affluent women are fearful that the abuse they experience will be discovered. In an investigation of pregnant Thai women, women abused during pregnancy were three times as likely to delay entry into prenatal care until after their fifth month (26%) compared to a no abuse comparison group (8%; Thananowan & Heidrich, 2008). Other studies find no significant difference between abused and non-abused women in terms of initiation of prenatal care (Díaz-Olavarrieta et al., 2007; Heaman, 2005; Lipsky et al., 2005).

3.3.1.2. Adequacy of prenatal care. There is some indication that adequacy of prenatal care may have an impact on violence during pregnancy. Campbell et al. (1992) reported that women abused by a partner during pregnancy were the least likely of the groups studied (no abuse, abuse by a partner during pregnancy, abuse by a partner before pregnancy only, or abuse by a non-intimate partner during pregnancy) to have received adequate prenatal care. Heaman (2005) found that women abused during pregnancy were more likely to receive inadequate prenatal care (missed number of prenatal visits, timing of first visit, and an index of three levels of adequacy) than those not abused during pregnancy. Lipsky et al. (2005) reported that women experiencing any IPV or physical IPV were more likely to receive inadequate prenatal care (less than 50% of expected visits once prenatal care began) compared to non-abused women or women experiencing non-physical IPV only. In addition, inadequate prenatal care utilization (a summary index of late initiation and less than 50% of expected visits) differed significantly by abuse status, with all abuse groups more likely to have inadequate utilization compared to non-abused pregnant women. Conversely, some studies find no association between the adequacy of prenatal care or the number of prenatal visits missed (Bailey & Daugherty, 2007; Dunn & Oths, 2004; Muhajarine & D'Arcy, 1999) and the risk for violence during pregnancy. National differences in health care systems may also have an impact on the accessibility and adequacy of prenatal care and it is important that research considers these differences when assessing the impact of prenatal care on the risk for violence.

3.3.2. Parity

There is some indication that violence during pregnancy is associated with an increased number of pregnancies, with some studies finding that multiparous women are more likely to be abused during pregnancy than those pregnant with their first child (Heaman, 2005; Muhajarine & D'Arcy, 1999). However, this relationship became non-significant in multivariate analyses in the two aforementioned studies. In addition, a number of studies reported no significant difference in parity among abused and non-abused pregnant women (Amaro et al., 1990; Campbell et al., 1992; Charles & Perreira, 2007; Díaz-Olavarrieta et al., 2007; Dunn & Oths, 2004). Conversely, Lipsky et al. (2005) found that the pregnancy was less likely to be the first child for all abuse groups (any IPV, physical IPV, and non-physical IPV) compared to non-abused pregnant women. Women experiencing physical abuse during pregnancy were also more likely to have had a previous induced abortion and a previous fetal death compared to non-abused women. In a Pakistani sample, the number of living children was independently associated with physical and/or emotional abuse during pregnancy (after controlling for respondents' and partners' age, education, and family income); each additional child increased the risk of experiencing violence by 34% (Farid et al., 2008).

3.3.3. Pregnancy intention

An association exists between pregnancy intention and the risk for experiencing violence during pregnancy (for a review, see Pallitto et al., 2005). A number of studies have found that unintended or unplanned

pregnancy is associated with the experience of violence during pregnancy (Charles & Perreira, 2007; Cokkinides et al., 1999; Cripe et al., 2008; Fanslow, Silva, Whitehead, & Robinson, 2008; Fanslow, Silva, Robinson et al., 2008; Gao, Paterson, Carter, & Iusitini, 2008; Goodwin et al., 2000; Leung et al., 1999; Perales et al., 2009; Stewart & Cecutti, 1993; Saltzman et al., 2003; Thananowan & Heidrich, 2008).

3.3.3.1. Issues surrounding unintended pregnancies. Hillard (1985) reported that women experiencing pregnancy violence were significantly more likely to report that their pregnancy caused problems and that they were less happy about the pregnancy than non-abused women. Women experiencing pregnancy violence have also reported that their male partners were more likely to be unhappy about the pregnancy compared to male partners of non-abused pregnant women (Amaro et al., 1990). Valladares et al. (2002) reported that women who experienced violence during pregnancy were more likely to report that their pregnancy was unwanted compared to those not experiencing violence during pregnancy. The most commonly cited reasons for not wanting the pregnancy included conflict with a partner and economic difficulties.

3.3.3.2. Unintended pregnancy and the extent of risk for violence. Stewart and Cecutti (1993) found that women with an unplanned pregnancy were almost three times more likely to experience violence during pregnancy compared to women with planned pregnancies. In an investigation of Pacific Islander families in New Zealand, statistically significant differences were found in the prevalence of unplanned pregnancy among physically abused (68.7%) and non-abused women (55.1%); however, no significant differences were found between victims of verbal aggression and non-abused women (Gao et al., 2008). Population-based studies from PRAMS data have indicated that women reporting unintended pregnancies were approximately 2.5 times more likely to experience violence during pregnancy compared to women with intended pregnancies (Goodwin et al., 2000; Saltzman et al., 2003). Goodwin et al. (2000) reported that the association between pregnancy intendedness and physical violence was modified by certain maternal characteristics; the association was strongest for older, educated, non-smoking, higher-SES White women, characteristics that have been associated with lower levels of violence. The authors suggested that the prevalence of violence among more disadvantaged groups might be relatively high regardless of pregnancy intention; therefore, risk ratios may fail to reach statistical significance among more disadvantaged groups. In a sample of adolescents, abused pregnant teens were more likely to report that their pregnancy was planned compared to non-abused pregnant adolescents (Wiemann et al., 2000), a finding that the authors acknowledged was difficult to explain.

3.3.3.3. Contraceptive use. Although Díaz-Olavarrieta et al. (2007) reported that the relationship between pregnancy intendedness and the risk for violence was not statistically significant; significantly fewer of the women abused during pregnancy (39%) were using contraception at the time of conception than women who were not abused during pregnancy (51%). Dunn and Oths (2004) found a significant association between contraceptive use and the risk for violence during pregnancy. If contraception was used, a woman's risk for pregnancy violence decreased ($aOR = 0.21$), which may be indicative of a woman's control over her own fertility. However, in this study, pregnant women not using birth control were also less likely to want the child once they conceived. The authors reasoned that this could be because the male partner prevents contraceptive use or it could be due to the fact that abused women may be too depressed to take care of their own contraceptive needs. Indeed, there is some indication that male partners may prevent the use of birth control in abusive relationships (Campbell, 2002; Chambliss, 2008; Pallitto et al., 2005).

3.3.3.4. Pregnancy termination. Violence during pregnancy has also been associated with pregnancy termination, which is indicative of unwanted pregnancies. Women abused during pregnancy have been shown to be more likely to have an induced abortion prior to the current pregnancy and to be particularly more likely to have had multiple (three or more) abortions compared to non-abused pregnant women (Janssen et al., 2003). Anecdotal evidence from women seeking abortion in a sample of British Columbia hospitals indicated that many women were forced by their partners to have an abortion under threats of violence and even death (Janssen et al., 2003). In an investigation of the prevalence of IPV among patients seeking abortion compared to other general gynecological patients, Leung et al. (2002) found that abortion-seekers had a significantly higher prevalence of abuse and tended to experience more severe abuse than other gynecological patients. In addition, 27.3% of the women seeking abortion admitted that their decision to terminate had been influenced by their histories of abuse.

Evins and Chescheir (1996) reported a 21.6% prevalence of past-year physical and/or sexual violence among a group of North Carolina women seeking abortion. And, of these, 36.4% were abused during their pregnancy and none of these women had experienced abuse for the first time during pregnancy. Both lifetime and past-year prevalence rates were higher than those found in the general population suggesting that women seeking elective termination of pregnancy may represent a particularly high-risk group. Conversely, Dunn and Oths (2004) found no significant association between either termination of pregnancy or pregnancy wantedness and the risk for experiencing violence during pregnancy. Although Hillard (1985) reported that abused pregnant women were more likely to consider elective abortion than non-abused women (34% vs. 21%), this relationship failed to reach statistical significance. A drawback of extant research is that the vast majority of studies utilize samples of women who deliver a live singleton birth and do not consider women with different pregnancy outcomes.

The experience of violence during pregnancy can have profound consequences for both the mother and her unborn child. An understanding of the underlying causes of pregnancy violence is needed in order to develop a more effective response to this social problem. A number of risk markers have been investigated as they relate to a woman's risk of experiencing violence during pregnancy. Although an understanding of what places certain women at risk for experiencing violence during pregnancy is an important step in this direction, these risk markers need to be incorporated into theoretical frameworks in order to provide a more comprehensive understanding of this specific form of violence against women.

4. Theoretical explanations

The study of violence during pregnancy has remained relatively atheoretical. There are a few general perspectives that have been used to approach research on pregnancy violence. A medical perspective “would identify a pregnant woman and her fetus as physical wounds and the abuser as suffering from psychiatric disorder(s)” (Noel & Yam, 1992, p. 875). The biomedical framework views violence as a “disease” that needs to be “cured” with the cure being conceptualized as separation from the partner (Shaw, 2003). According to Shaw, the medical model fails to take into account, or address, the realities facing abused pregnant women and it is unrealistic to expect an easy fix, or cure, to the problem of violence against pregnant women. An alternative view is the sociological perspective, which “emphasizes stress, unemployment, poor conflict management skills, and the intergenerational transmission of violent behavior and power imbalances in the female–male relationship as factors contributing to abuse” (Noel & Yam, 1992, p. 875). Noel and Yam (1992) advocate a feminist perspective in understanding violence against pregnant women that views power inequity as the central cause of violence against women; “men use violence to

control women and...violence is a form of oppressing women" (p. 875). Although these approaches provide lenses through which pregnancy violence has been conceptualized, three main explanations for pregnancy violence have been put forth.

4.1. Pregnancy-related stress

Jasinski (2001) proposed that pregnancy-related factors might increase the stress experienced by the couple, which, in turn, may increase the risk for IPV during pregnancy. First-time parents may experience more stress than parents who already have children, unplanned and unwanted pregnancies may be more stressful compared to those that were planned, and young age at time of pregnancy may be more stressful than pregnancy at an older age. Both unplanned pregnancy (e.g., Goodwin et al., 2000) and young age (e.g., Saltzman et al., 2003) have been associated with an increased risk of violence during pregnancy in past research. However, as discussed above, increased risk for pregnancy violence tends to be associated with multiparity (e.g., Lipsky et al., 2005) rather than primiparity (an indicator of first-time parenthood), although findings are inconsistent in the extant research.

Normative transmissions associated with the entrance into and/or exit from a social role may also be associated with stress and pregnancy represents a significant transition period (Jasinski, 2001). Pregnancy may also exacerbate preexisting strains (e.g., lower SES), which may have a negative impact on relationship functioning and contribute to marital discord. Violence has been linked to increased marital conflict and stress in past research with non-pregnant couples (Jasinski, 2001; Jasinski & Kaufman Kantor, 2001). The increased risk of violence may also be a result of the cumulative effect of multiple stressors. In a test of this hypothesis using longitudinal data from the National Survey of Families and Households, Jasinski (2001) found that certain pregnancy-related factors (hypothesized to be associated with increased stress) contributed to differing patterns of violence. Specifically, the birth of a first child was associated with the cessation of preexisting violence whereas persistent violence was associated with mistimed pregnancies. The mother's age at birth of the first child was not significantly associated with any violence category (violence initiation, violence cessation, or persistent violence). These findings suggest that certain pregnancy-related factors may be associated with different trajectories of violence. However, it remains unclear whether these pregnancy-related factors are, in fact, associated with increased stress, as couple stress was not directly measured in the analyses. The relationship between pregnancy-related stress and the risk for violence requires further investigation before any definitive conclusions can be drawn.

4.2. Social learning theory

Social learning theory may have potential as a partial explanation for violence against pregnant women, although it has not been explicitly tested as it relates to pregnancy violence. Violence in the family is often transmitted across generations; children who witness or experience violence are more likely to perpetrate or fall victim to violence as adults compared to non-exposed children (e.g., Brownridge, 2006; Guille, 2003; Whitfield, Anda, Dube, & Felitti, 2003). In addition, there is a significant correlation between IPV and child abuse (Burch & Gallup, 2004; Campbell, 2002; Casanueva & Martin et al. 2007; Chambliss, 2008; Pulido, 2001; Pulido & Gupta, 2002). In an investigation of convicted spouse abusers, Burch and Gallup (2004) found that witnessing IPV in the family of origin correlated with being physically punished ($r = .267, p < 0.001$), being physically abused ($r = .363, p < 0.001$) and being sexually abused ($r = .157, p < 0.05$) in childhood. Furthermore, the frequency and severity of current partner abuse were correlated with the physical punishment of children in the home. In a sample of pregnant women in Karachi, Pakistan, the husband's exposure to maternal

abuse in his own family of origin increased the risk that he would be physically and/or emotionally violent towards his own partner while she was pregnant (aOR = 1.34; Farid et al., 2008).

Sales and Murphy (2000) reported that many of the drug-addicted women who experienced violence during pregnancy had histories of child abuse. Among women seeking abortion services in a North Carolina clinic, both victims of domestic violence and their partners were more likely to have been abused as children and to have witnessed interparental violence in their family of origin (Evins & Chescheir, 1996). Violence during pregnancy may represent a continuation of a pattern of violence experienced by these women throughout their lives; Díaz-Olavarrieta et al. (2007) reported that 25 of the 99 women in their sample who had experienced violence during pregnancy had also reported abuse during every life period for which they were asked (childhood, adult life, past year, and pregnancy). Pregnant adolescents abused by an intimate partner are significantly more likely to report exposure to prior and concurrent forms of violence compared to non-abused pregnant adolescents (Wiemann et al., 2000). In addition, women abused during pregnancy may be more likely to abuse their children than non-abused pregnant women. Casanueva and Martin (2007) found that women physically abused during pregnancy had three times the odds of having increased Child Abuse Potential Inventory (CAPI) scores compared to non-abused pregnant women. It is clear that violence in the family of origin has an impact on rates of adult perpetration and victimization; however, this relationship has not been fully explored as it relates specifically to the risk of violence during pregnancy.

4.3. Evolutionary psychology

Burch and Gallup (2004) suggested that evolutionary psychology theory might be especially relevant to the understanding of violence against pregnant women. Wilson, Johnson, and Daly (1995) state that "male sexual proprietariness is the main substantive issue behind violence against wives" (p. 354), and this may be especially salient for understanding the risk of violence against pregnant women. Research indicates that abusive male partners tend to be more sexually jealous and possessive of their partners compared to non-abusive men (Bacchus et al., 2006; Burch & Gallup, 2004; Chambliss, 2008; Decker et al., 2004; Pallitto et al., 2005; Sales & Murphy, 2000). Bacchus et al. (2006) found that abused women reported increased levels of insecurity, jealousy, and possessiveness in their male partners during pregnancy. McFarlane et al. (1995) reported that women who were abused during pregnancy were significantly more likely to report that their partners were violently jealous (49.4%) compared to women who were abused in the past year, but not during pregnancy (34.5%).

In a study investigating homicide risk factors of women abused during pregnancy, 58% of the women reported that their partners were violently jealous in the year before pregnancy and this pattern of jealous behavior continued for 39% of the women who stayed with their partner (Decker et al., 2004). This study also found that women who left their partners after becoming pregnant reported significantly higher partner jealousy scores than the women who stayed, which could translate into the separation period being a time of increased risk for pregnant women. In a sample of convicted spouse abusers, men with pregnant partners evidenced significantly higher sexual jealousy scores than men whose partners were not pregnant (Burch & Gallup, 2004). McFarlane et al. (2002) reported that women who were abused during pregnancy were stalked at a significantly greater rate than abused women who were not abused during pregnancy. In addition, pregnancy has been linked to an increased sense of ownership over women by their male partners (Sales & Murphy, 2000).

According to evolutionary psychology theory, men are concerned with the continuation of their gene pool and violence is largely motivated by paternal uncertainty, "unless the man constantly

monitors his partner, or isolates her from other men, there is always a possibility, because of rape or infidelity, that the children she bears are not his" (Burch & Gallup, 2004, p. 244). Paternal uncertainty and accusations of infidelity have been associated with an increased risk of violence among pregnant women (Bacchus et al., 2006; Chambliss, 2008; Pallitto et al., 2005). Violence is seen as a paternal assurance technique used to combat paternal uncertainty. In a comparison of violent and non-violent pregnant couples, women who were abused during pregnancy were more likely to be carrying a child that was not her current partner's biological child (Martin et al., 2004), which may be related to paternity issues. Pregnant women are often preoccupied with the physical symptoms and body changes associated with pregnancy as well as with the health of the unborn child (Noel & Yam, 1992; Pulido & Gupta, 2002), which may translate into an increased risk of violence from an emotionally insecure and dependent male partner (Bacchus et al., 2006; Noel & Yam, 1992). Further, male partner resentment towards the unborn child may surface as a response to doubts surrounding paternity. In a qualitative study investigating factors contributing to pregnancy violence, 33.3% of the women abused during pregnancy cited jealousy or anger over the unborn child as the precipitating cause of the violence they experienced (Campbell et al., 1993). Existing research seems to lend support to evolutionary psychology as a potential explanation for violence against pregnant women.

5. Directions for future research

The current review has integrated findings from a number of studies concerning the prevalence of pregnancy violence, the nature and patterns of this violence, the factors that put women at risk, and the theories that may contribute to a better understanding of the violence directed at this specific vulnerable population. On this basis, it is evident that a number of areas warrant attention in future research directed at better understanding violence against pregnant women.

5.1. The prevalence of pregnancy violence

A number of limitations that emerged from the Gazmararian et al. (1996) review have been addressed in more recent research. Gazmararian et al. (1996) reported that higher disclosure rates were found in studies using in-person interviews from a "skilled and trained" (p. 1919) clinician (vs. self-administered questionnaires), repeated questioning throughout pregnancy or asking about abuse later in the pregnancy period, and studies that use a number of very specific questions about the types of abuse experienced. Most of the studies included in the present review have used methodologies that facilitate higher disclosure and assessed violence late into or over the course of the entire pregnancy period (Charles & Perreira, 2007; Covington et al., 2001; Díaz-Olavarrieta et al., 2007; Dunn & Oths, 2004; Farid et al., 2008; Guo et al., 2004; Heaman, 2005; Janssen et al., 2003; Muhajarine & D'Arcy, 1999; Perales et al., 2009; Saltzman et al., 2003; Shumway et al., 1999; Yost et al., 2005). And the vast majority used a violence measure that included very specific questions regarding the abuse experience (for exceptions, see Charles & Perreira, 2007; Johnson et al., 2003; Yost et al., 2005). The use of broad questions asking only whether a woman has been "physically abused," which leaves much open to interpretation and which may result in inaccurate and inconsistent classifications, has been addressed through the development and utilization of standardized measures of violence during pregnancy such as the AAS. Studies relying on self-administered questionnaires (e.g., Johnson et al., 2003; Saltzman et al., 2003; Thananowan & Heidrich, 2008), a community-based interview survey (Guo et al., 2004), or secondary analysis of medical records (e.g., Janssen et al., 2003) tended to report lower prevalence rates of physical violence during pregnancy compared to those using in-person interview techniques. In light of the findings of the current

review, a number of other areas are highlighted as warranting attention in future research.

5.1.1. Differentiating types of violence experienced during pregnancy

To develop a better understanding of violence against pregnant women, research must differentiate between the various forms of abuse experienced by pregnant women. Research indicates that the consequences of violence experienced by pregnant women may vary according to type of violence experienced and it is likely that physical, sexual, and emotional violence may have unique and independent impacts on the physical and mental health of both pregnant women and their unborn children. Some investigations find no relationship between emotional abuse alone and a number of adverse fetal outcome measures (Janssen et al., 2003; Leung et al., 2001). Other studies have reported an association between verbal abuse and low birth weight (Yost et al., 2005). The failure to differentiate between the type(s) of abuse experienced by pregnant women may be a factor contributing to the inconsistent findings concerning pregnancy violence and adverse fetal outcomes. In addition, pregnant women experiencing psychological abuse, even in the absence of physical and/or sexual violence, have been reported to be at an increased risk of both postpartum depression and thinking of harming themselves (Tiwari et al., 2008).

Most studies focus on physical violence and do not assess either sexual or emotional abuse in their analyses. There is some indication that women who are sexually assaulted by their partners may not consider themselves physically abused (McFarlane, Chistoffel, Bate-man, Miller, & Bullock, 1991). As well, sexual assault by an intimate partner may result in pregnancy, an area that deserves attention in future research (McFarlane, 2007). Thus, research directed at understanding pregnancy violence needs to include an assessment of both sexual and psychological violence because measures focusing solely on physical violence may both underestimate the prevalence of violence experienced by pregnant women and contribute to the inconsistent research findings reported in the extant literature.

5.1.2. The reliance on the AAS as a measurement tool

While the AAS has been beneficial for overcoming the lack of standardized measures in research on pregnancy violence, the widespread reliance on the AAS as a measure of violence during pregnancy warrants attention in future research. The AAS only assesses the occurrence of physical violence during pregnancy (see Fig. 1) and the failure of this screening instrument to measure other forms of violence during pregnancy can be viewed as a major limitation of the AAS as a research tool. Also, there is some evidence suggesting that the AAS fails to detect a significant proportion of physically violent episodes that are reported in previously validated instruments such as the CTS (Reichenheim & Moraes, 2004).

A Chinese version of the AAS has been developed and tested with a sample of 257 Chinese women (100 pregnant women and 157 non-pregnant women) and has demonstrated satisfactory accuracy of measurement compared to the Chinese CTS2 (Tiwari et al., 2007), especially concerning detection of emotional abuse. However, the Chinese AAS included a number of behaviorally-specific examples of emotional abuse that may have facilitated increased disclosure. These behaviorally-specific examples of forms of emotional abuse are not found in the original version of the AAS that is widely used throughout the literature. Regarding physical violence, the Tiwari et al. (2007) investigation reported a high rate of false negatives when a minimum Chinese CTS2 score of 2 was used (score indicates the number of physical assault items reported by the respondent); the sensitivity increased to 66.7% when a minimum score of 3 was used, further indicating that the AAS may fail to detect the occurrence of less severe forms of physical violence. The original AAS has been modified to include "pushing" and "shoving" to the list of physically abusive acts, which may increase detection of less severe forms of physical violence (Reichenheim & Moraes, 2004; Tiwari et al., 2007). However, the new

version has yet to be tested against the CTS. The failure to identify women who are being physically, mentally, or sexually abused during pregnancy may have profound implications for the health and well being of these women, particularly if it leads to a number of abused pregnant women being “screened out” of needed services.

5.1.3. *The separation of pre-pregnancy and during pregnancy violence in analyses*

A number of studies assess pregnancy violence as violence occurring in the 12 months before/shortly after delivery (e.g., Bailey & Daugherty, 2007; Dietz et al., 1997; Gao et al., 2008) or collapse those abused in the past year and those abused during pregnancy into a single abuse group in their analyses (e.g., Heaman, 2005; Leung et al., 1999). Consequently, reported results do not pertain to the pregnancy period exclusively, which may confound findings. Research must clearly differentiate between violence experienced during pregnancy and violence experienced at other points in the lifespan. Although the assessment of a woman's history of abuse prior to pregnancy contributes to a better understanding pregnancy violence, it needs to be investigated separately from abuse occurring during pregnancy, which may have different underlying causes and contributing factors.

5.1.4. *Perpetrator assessment*

The inclusion of women abused by intimate partners and women abused by others into a single abuse group may confound results concerning violence against pregnant women. IPV has different causes and contributing factors than other forms of violence against women and must be studied separately from violence perpetrated by non-intimate partners. Although many studies ask participants to identify the perpetrator(s) of the violence (e.g., Covington et al., 2001; Leung et al., 1999; Muhajarine & D'Arcy, 1999; Saltzman et al., 2003; Thananowan & Heidrich, 2008), the majority of studies do not differentiate between abuse by intimate partners and abuse perpetrated by others in their analyses (for exceptions, see Charles & Perreira, 2007; Janssen et al., 2003). This distinction may be especially salient for adolescent samples who often experience violence from multiple perpetrators (Berenson et al., 1992; McFarlane et al., 1995), frequently including both intimate partners and family members. Existing research may be confounding IPV with child abuse. Violence perpetrated by other family members, acquaintances, or others may have different causes, contributing factors, and consequences than violence perpetrated by an intimate partner (Barnett, Miller-Perrin, & Perrin, 2005).

5.2. *Understanding the patterns of violence against pregnant women*

Research must be directed at understanding how the patterns and nature of violence change throughout a woman's reproductive lifespan, including the pregnancy period. It may be that violence experienced during pregnancy is qualitatively different from violence experienced at other points in a woman's lifetime. Violence during pregnancy not only impacts the pregnant woman's physical and mental health, but also the developmental health of the unborn child. To more fully understand the phenomenon of pregnancy violence, a more complete appreciation of how the nature and patterns of violence change, or fail to change, at pregnancy onset is required.

5.2.1. *Does pregnancy change the pattern of violence?*

Longitudinal research investigating the patterns of violence experienced by pregnant women is needed to determine whether the nature of violence changes with pregnancy onset. It may be that pregnant women are subject to different patterns of violence compared to their non-pregnant counterparts and the types of abuse they experience may change at pregnancy onset. It could be that a decrease in physical violence parallels an increase in psychological violence for many abused pregnant women. As pregnancy appears to be a protective factor for some women, samples of pregnant women should be followed into the postpartum

period to see if the protection offered by pregnancy continues after the birth of the child. Few studies follow the same sample of women throughout pregnancy and into the postpartum period (see Table 1). At the present time, little is known as to why pregnancy offers a period of protection for some women while posing an increased risk for others. It may also be that pregnant women choose to opt out of an abusive relationship once they believe that their unborn child may also be at risk. Decker et al. (2004) reported that pregnant women who left their abusive partners after becoming pregnant were at a higher risk for homicide prior to pregnancy than those who stayed with their partners. Thus, it could be that protection offered by pregnancy is merely a reflection of women, motivated by their pregnancies, choosing to leave their abusive situations. Although research has also suggested that ending an abusive relationship during pregnancy is generally not an option considered by pregnant women (Lutz, 2005). Understanding what contributes to the varying trajectories of violence (violence starts, violence ceases, or violence continues) remains an important avenue of investigation.

5.2.2. *Assessing the frequency and severity of pregnancy violence*

Gelles (1988) has suggested that pregnancy violence may be over-reported in some studies due to the fact that women may consider the experience so outrageous that it likely stands out in their memories. Women experiencing violence during pregnancy may find it so abhorrent that they rate it as more severe than violence experienced at other times in their lifespan (Díaz-Olavarrieta et al., 2007). Gelles (1988) also noted that women experiencing pregnancy violence might also be more likely to volunteer for studies on IPV. Therefore, it is important to assess the frequency and severity of pregnancy violence with behaviorally-specific questions. To determine whether violence escalates, de-escalates, or remains the same for women who are abused both before and during pregnancy, behaviorally-specific measures should be utilized. Such measures would facilitate objective comparisons both across time frames and between studies by reducing the potential source of bias related to the possibility that women who experience violence during pregnancy may rate, sometimes inaccurately, this experience as more severe than violence experienced during other periods. Behaviorally-specific questions can eliminate response subjectivity to a certain extent by allowing objective comparisons of specific acts of violence that occurred over different periods of the reproductive lifespan. The failure to adequately assess the severity and timing of violence experienced during pregnancy has also been implicated as contributing to the varied findings regarding fetal outcomes in existing literature (Covington et al., 2001; Shumway et al., 1999). In order to more accurately assess both the consequences of pregnancy violence and the potential changing patterns and/or the nature of violence experienced during pregnancy, measures of severity and frequency must be included in future analyses.

5.2.3. *Pregnant women's use of violence*

The use of violence by pregnant women against their male partners is an area that has remained virtually ignored in the extant research (for exceptions, see Charles & Perreira, 2007; Martin et al., 2004). Martin et al. (2004) investigated both male and female victimization rates for multiple types of violence both before and during pregnancy. Among index couples (the woman had screened positive for experiencing violence during pregnancy) and comparison couples (the woman had screened negative for experiencing violence during pregnancy), both males and females reported a significant increase in psychological aggression at pregnancy onset. However, among index couples, the rates of physical assault victimization did not significantly differ by gender either before or during pregnancy (although women reported a higher mean number of incidents in both cases than their male partners). Additionally, both partners reported an increase in the mean number of physically violent incidents per month after pregnancy onset, although the reported increases were not statistically significant. Index women were also significantly more likely to be victims of sexual coercion compared to

their male partners in both periods. Charles and Perreira (2007) also investigated victimization rates of both male and female partners and found that male partners reported a higher prevalence of physical violence victimization during pregnancy (8.2%) than female partners (1.2%). However, rates of emotional abuse victimization were similar for both males and females (7.0% vs. 7.5%, respectively). The findings of these studies suggest that the female partner's use of violence, and the context within which it occurs, needs to be considered as it relates to the risk of experiencing violence during pregnancy.

5.3. Risk factors contributing to pregnant women's vulnerability

There are inconsistencies in the literature regarding what places women most at risk for experiencing violence. Although many of the risk factors are similar to those found to increase the risk for violence among non-pregnant women, many seem particularly relevant for the understanding of pregnancy violence, particularly pregnancy-related factors and perpetrator characteristics. A number of additional areas concerning the risk of violence against pregnant women are discussed below and should be incorporated into future research agendas as appropriate.

5.3.1. The inclusion of potentially high-risk groups in research

Future research needs to be directed at other, potentially high-risk, groups of women, such as those choosing to terminate a pregnancy. A major drawback of existing research is that it often requires a live, singleton birth as the pregnancy outcome for inclusion in the study. Research has suggested that unplanned and unwanted pregnancies increase the risk for violence during pregnancy (e.g., Goodwin et al., 2000), and elective termination of pregnancy is indicative of an unwanted pregnancy. The failure to include women whose pregnancies do not result in a live birth in research endeavors may result in the failure to address the needs of this particularly vulnerable population.

5.3.2. Pregnancy violence in less developed nations

Research concerning violence against pregnant women in less developed nations is a relatively new area of investigation and, as such, less is known about factors contributing to pregnancy violence in the developing world. In a review of the literature regarding pregnancy violence in developing countries, Nasir and Hyden (2003) reported that many of the risk markers that increase the risk of pregnancy violence in developing nations are similar to those found in the industrialized world (i.e., low SES, low education, unintended/unwanted pregnancy, and alcohol use by the male partner). The relationship between unintended pregnancy and the risk of pregnancy violence is a consistent finding throughout the literature (Gazmararian et al., 2000) and women in less developed areas may lack access to contraceptive use and safe abortions (Campbell et al., 2004), which could translate into an increased risk of unintended pregnancy and violence. Cross-cultural research has shown that the status of women and degree of gender inequality within a society had an impact on the rates of violence against women generally (Archer, 2006) and it is likely that status differences and the degree of gender inequality will also have an impact on the rates of violence against pregnant women specifically.

5.3.3. Personality characteristics of the male partner

There is a dearth of research on perpetrator characteristics that may impact the risk of pregnancy violence and virtually no studies include the male partners' perspectives in their analyses (for an exception see Burch & Gallup, 2004). A number of personality characteristics of the male partner have been implicated in the etiology of pregnancy violence, such as dependency, jealousy, and possessiveness towards the female partner. Future research should include an assessment of these personality characteristics as they relate to violence directed towards a pregnant partner. It may be that the causes of pregnancy violence are better explained by examining characteristics of the perpetrator rather than the victim.

5.4. Theoretical development

Finally, possible theoretical explanations need to be incorporated into the existing research on pregnancy and violence. The study of pregnancy violence has remained relatively atheoretical. To develop a more complete understanding of violence against pregnant women, theories specific to understanding pregnancy violence must be developed and empirically tested.

6. Conclusion

Violence during pregnancy may be more common than many conditions for which women are routinely screened or evaluated during pregnancy including preeclampsia, placenta previa, and gestational diabetes (McFarlane et al., 1996). Yet, many women are not screened for violence during pregnancy (Shaw, 2003). In an investigation of the acceptability of screening for IPV during pregnancy, Renker and Tonkin (2006) found that 97% of the women screened reported that they were not embarrassed, angry, or offended when screened for the occurrence of IPV during pregnancy. The results of this review, and that of extant research, suggest that the universal screening for IPV is warranted among the population of pregnant women. Although pregnancy may be a protective period for some women, it is clear that it is a period of increased risk for a substantial minority. Understanding the nature and patterns of violence is an important avenue for future research as is research directed at understanding what makes certain women specifically vulnerable for experiencing pregnancy violence.

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