

# Women's Intimate Partner Violence Perpetration During Pregnancy and Postpartum

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**Abstract** The purpose of this longitudinal study was to examine the prevalence of women's psychological, minor physical, and severe physical intimate partner violence (IPV) perpetration during the first 18 weeks of pregnancy and at 6 weeks postpartum and to compare women who used each type of IPV to those who did not. Women who increased their IPV perpetration over time were also compared to women who decreased or did not change their IPV perpetration over time. A sample of 180 women participated in a larger study of the well-being of pregnant women. Data were collected via self-report survey and 122 participants were retained at follow-up. At both time points, more women in the sample reported IPV perpetration (baseline  $n = 132$ ; follow-up  $n = 73$ ) than IPV victimization (baseline  $n = 114$ ; follow-up  $n = 66$ ). Women who perpetrated IPV reported higher levels of IPV victimization, reported partner alcohol misuse, stress, depression, and lower dyadic adjustment compared to women who did not. Women's IPV perpetration was associated with several negative outcomes. Findings suggest that IPV screening during pregnancy and postpartum should include women's IPV perpetration and should be conducted at multiple time points, since women's IPV experiences may change over time.

**Keywords** Intimate partner violence · Pregnancy · Postpartum · Depression · Alcohol misuse

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## Introduction

Intimate partner violence (IPV) victimization during pregnancy and postpartum is highly prevalent and has many negative sequelae for mother and child, including mental health problems, substance abuse, smoking, and negative birth outcomes [1–5]. Despite extensive literature documenting the prevalence and negative effects of IPV victimization in this population, literature examining women's IPV perpetration in this population is scant [6]. Women's IPV perpetration has detrimental health effects for men and women across populations [7, 8] and increases women's risk for substance abuse, depression, and IPV victimization [6, 9–11]. Improving our understanding of women's experiences of IPV during pregnancy and postpartum might inform the ongoing process of developing effective screening and interventions for women.

IPV is often understood to be a complex relational problem. The risk factors of each partner in concert with dyadic, situational, and environmental risk factors are believed to contribute to the acute and long-term prevalence of IPV [12–14]. Some researchers cite the bidirectional nature of violence in their samples to support the idea that IPV is often a dyadic problem [15], while others assert that bidirectionality of violence cannot fully support that conclusion [8, 16]. Indeed, women might use many types and even a high frequency of violence toward their intimate partners due to fear of their partner or in self-defense in the context of their own victimization [8, 17–19]. Thus, exploring women's IPV perpetration and victimization may facilitate improved knowledge of its etiologies and pathways to intervention.

Just one cross-sectional study has published findings related to women's IPV perpetration during pregnancy [6], and none have reported on this topic postpartum. These

gaps have resulted in an incomplete understanding of how the occurrence of IPV might change or remain stable across a complicated transitional time in women's lives. Tzilos and colleagues [6] found that a high proportion of women perpetrated IPV during pregnancy and that more women in their sample reported perpetrating IPV than IPV victimization. A second limitation of past research is that studies in this area rarely differentiate between types or severity of IPV (e.g., psychological, minor physical, severe physical). The present study addressed these gaps by utilizing a longitudinal design and examining three types of IPV. Examining IPV by type is crucial since types of IPV are often differentially related to various precursors, correlates, and health outcomes [20–22]. The aims of this study were to examine (a) the prevalence of women's at baseline (during the first 18 weeks of pregnancy) and follow up (6 weeks postpartum), (b) differences between women who perpetrated IPV and those who did not at baseline and follow up, and (c) differences between groups of women whose perpetration of IPV increased, decreased, or did not change between baseline and follow up. We hypothesized that women who perpetrated each type of IPV would also report higher levels of IPV victimization, own and reported partner alcohol misuse, stress, depression, and lower levels of dyadic adjustment compared to those who did not perpetrate IPV.

## Methods

### Study Participants

All study procedures were consistent with the ethical principles of the American Psychological Association and approved by the IRBs of the investigators' home institution and the recruitment sites. A sample of 180 women in their first eighteen weeks of pregnancy was recruited from two university affiliated health clinics between October 2007 and July 2009. These clinics served women from the surrounding community consisting of urban, suburban, and rural populations. These clinics provided obstetric and gynecological care exclusively and accepted both private insurance and government-funded health care plans, resulting in a population of women of low socioeconomic status and childbearing age. Study inclusion criteria dictated that each participant (a) spoke and read English, (b) was at least 18 years of age, (c) was not more than 18 weeks pregnant, and (d) had contact with either their intimate partner or child's father at least once per month. If a woman was not in an intimate relationship, she referred to her child's father when responding to questionnaires at both time points. Participants reported on the same partner for both time points. The follow-up assessment was

identical to that administered at baseline. One hundred twenty-two participants completed follow-up assessments.

Most participants in this sample (79 %) were Caucasian, Christian (81 %), reported a household income of less than \$50,000 yearly (87 %), and had attained roughly the equivalent of a high school level of education (80 %). Approximately 64 % of participants reported that they were currently in a dating relationship, 23 % reported that they were married, 4 % reported that they were divorced, and 7 % reported that they were not currently in a romantic relationship. Participant reports of the duration of their relationships ranged from one month to 21 years. The mean relationship length was 34.6 months (SD = 40.76). On average, women in this sample had a mean of 1.2 children (SD = 1.3) already living in their household including biological offspring, stepchildren, or adopted children.

### Recruitment and Assessment Procedures

Members of the medical team assisted in recruitment. A nurse or nurse practitioner briefly explained the nature of the study and, if the patient was interested, asked if a female member of the research team could enter the exam room in order to explain the study further. The research assistant explained that the purpose of this study was to better understand the health and wellbeing of pregnant women. Those who met eligibility criteria and were interested in participation were asked to read and sign the consent form after having the scope of confidentiality of the study explained and asking any questions they had. Participants completed their questionnaires in the privacy of their exam room while waiting for their physician to arrive. Participants earned a twenty-five dollar gift card as compensation at each time point.

### Measures

The revised conflict tactics scale (CTS-2; 23) is a 78-item self-report scale used to measure participants' IPV perpetration and victimization. The reference period at baseline was the time since her pregnancy began. The reference period at follow-up was the time period since her baseline assessment took place. For the purposes of this investigation, only the psychological, minor physical, and severe physical aggression subscales were utilized. Consistent with the procedure outlined by Straus et al. [23] the frequency of each behavior was recoded such that the midpoint of each range is the score value (*never* = 0, *once* = 1, *twice* = 2, *3–5 times* = 4, *6–10 times* = 8, *11–20 times* = 15, *more than 20 times* = 25). These values are then summed to obtain a total score for each subscale. Participants' psychological IPV perpetration and

victimization was the sum of 8 items indicating psychological IPV perpetration (Cronbach's  $\alpha = .74$ ) or victimization (Cronbach's  $\alpha = .84$ ). Minor physical perpetration and victimization was the sum of 5 items indicating minor physical IPV perpetration (Cronbach's  $\alpha = .73$ ) or victimization (Cronbach's  $\alpha = .78$ ), and severe physical victimization was the sum of 7 items indicating severe physical perpetration (Cronbach's  $\alpha = .77$ ) or victimization (Cronbach's  $\alpha = .83$ ).

The Alcohol Use Disorders Identification Test (AUDIT; [24]) is a 10-item self-report instrument used to screen for alcohol misuse. Participants were also administered the AUDIT modified to assess participants' reports of their partner's alcohol misuse (AUDIT-P; [25, 26]). The AUDIT and AUDIT-P assess (1) quantity and frequency of drinking, (2) indicators of physiological dependence, (3) negative psychological reactions and psychological dependence symptoms, and (4) alcohol related problems that the person has encountered. Each item was scored from 0 to 4, then summed to obtain a total score. Total scores range from 0 to 40 with higher scores being indicative of greater alcohol problem severity. A score of six or higher for women participants [27, 28] and a score of eight or higher for men [29] are considered clinically significant. This measure was modified for the current study to examine a period of 6 months as opposed to the original 12-month time frame. In this sample, the Cronbach's alpha for the AUDIT and AUDIT-P were .69 and .85, respectively.

The Perceived Stress Scale (PSS; [30]) is a 14-item self-report questionnaire used to assess global life stress. It is commonly used in pregnancy research and studies of low SES individuals. Each item is scored on a scale from 0 to 4 (0 = "never", 1 = "almost never", 2 = "sometimes", 3 = "fairly often", and 4 = "very often"), then summed to obtain a total score. Higher scores are indicative of higher perceived stress. There is no clinical cutoff score for the PSS. This measure demonstrated adequate reliability in the present study with a Cronbach's alpha = .76.

The Center for Epidemiological Studies Depression Scale (CES-D; [31]) is a widely used self-report measure of depression consisting of twenty items. Participants rated the frequency of various symptoms of depression on a scale of 1-4 (1 = "rarely or none of the time," 2 = "some or a little of the time", 3 = "occasionally or a moderate amount of time", and 4 = "most or all of the time"). Scores of 16 and higher reflect clinically significant levels of depression. The Cronbach's alpha in this study was .88.

The Dyadic Adjustment Scale (DAS; [32]) is a 32-item self-report questionnaire that is widely used to measure relationship adjustment in romantic couples. Each item is scored on a scale from 0 to 5 (0 = "always disagree", 5 = "always agree"), and these scores are summed to obtain a total score from 1 to 151. Higher scores on the

DAS are indicative of higher levels of relationship adjustment, and scores below 97 are considered to be indicative of relationship distress. In the present sample the DAS had a Cronbach's alpha of .84.

### Data Analytic Strategy

Two sets of group comparisons were conducted in this study. First, independent samples *t* tests were employed to examine differences between participants who had perpetrated each type of IPV and those who had not. These groups were compared at baseline and follow-up. Bonferroni corrections were applied by hand to *t* tests in order to reduce the likelihood of type I error [33]. This procedure indicated that the cutoff for statistical significance was  $p < .0028$  for the baseline *t* tests and .0021 for the follow-up *t* tests. Second, one-way between subjects ANOVAs with post hoc Tukey's HSD tests were employed to compare participants who reported an increase, decrease, or no change in their IPV perpetration from baseline to follow up. Group membership was determined by creating change scores, which were calculated by subtracting participants' total CTS-2 score at baseline from their total CTS-2 score at follow-up. Two sets of ANOVAs were conducted: one to compare the baseline characteristics of these three groups, and another to compare their follow-up characteristics. Preliminary analyses of tolerance and variance inflation factor (VIF) ruled out the possibility of multicollinearity between IPV perpetration and victimization variables at both time points. Preliminary analyses were also conducted in order to determine if differences existed between those who completed follow-up and those who did not. Findings indicated group differences on only one construct: Those who completed follow-up reported longer mean relationship length (40 months; SD = 45.71) than those who did not (24 months; SD = 27.72).

### Results

Prevalence and descriptive statistics of all study variables are presented in Table 1. At both time points, a greater proportion of participants reported perpetrating each type of IPV than experiencing each type of IPV victimization. At baseline, 21 participants (12 %) reported at least one instance of any type of IPV perpetration (i.e., psychological, minor physical, or severe physical) in the absence of IPV victimization. At follow-up, nine participants (7 %) reported at least one type of IPV perpetration in the absence of IPV victimization, and six of those nine participants had not experienced any type of IPV victimization at either time point.

**Table 1** Descriptive statistics of study variables at baseline and follow-up

	Baseline			Follow-up		
	Prevalence	Observed range	Mean (SD)	Prevalence	Observed range	Mean (SD)
<b>IPV perpetration</b>						
Psychological	130 (72.2 %)	0–129	12.10 (20.16)	79 (64.8 %)	0–137	11.06 (20.81)
Minor physical	38 (21.1 %)	0–33	1.07 (3.53)	25 (20.5 %)	0–54	1.17 (5.69)
Severe physical	17 (9.4 %)	0–45	0.44 (3.47)	15 (12.3 %)	0–54	1.02 (6.75)
<b>IPV victimization</b>						
Psychological	122 (67.7 %)	0–104	11.10 (20.30)	66 (54.1 %)	0–107	9.09 (17.98)
Minor physical	24 (13.3 %)	0–40	1.77 (5.21)	13 (10.7 %)	0–29	.96 (4.41)
Severe physical	15 (8.3 %)	0–47	.56 (3.86)	5 (4.1 %)	0–52	1.53 (7.55)
Alcohol misuse	17 (9.4 %)	0–13	1.66 (2.86)	5 (4.1 %)	0–20	9.59 (4.23)
Partner alcohol misuse	26 (14.4 %)	0–27	3.68 (5.34)	12 (9.8 %)	0–27	2.65 (5.14)
Stress	–	3–37	21.89 (6.49)	–	0–41	19.81 (7.05)
Depression	91 (50.6 %)	1–60	17.14 (10.50)	43 (35.2 %)	0–47	14.80 (11.09)
Dyadic adjustment	26 (14.4 %)	27–146	117.01 (21.11)	20 (16.4 %)	16–143	113.99 (21.61)

Baseline N = 180. Follow-up n = 122. IPV = Intimate partner violence. Prevalence of IPV reflects the number and percentage of women who reported at least one incident of that type of IPV. Prevalence of alcohol misuse, depression, and dyadic adjustment variables represent the number and percentage of women who reported AUDIT and AUDIT-P scores  $\geq 6$  and 8, respectively, CES-D scores of 16 or higher, and DAS scores of 97 or below

Among the 122 participants who completed follow-up assessments, 55 participants (45 %) reported a reduction, 39 (32 %) reported no change, and 28 (23 %) reported an increase in their psychological IPV perpetration. Sixteen participants (13 %) reported a reduction, 94 (77 %) reported no change, and 12 (10 %) reported an increase in their minor physical IPV perpetration. Finally, eight participants (7 %) reported a reduction, 107 (88 %) reported no change, and seven (6 %) reported an increase in their severe physical IPV perpetration. However, most of the participants who reported no change in their use of IPV did so because they did not perpetrate any IPV at either time point.

Means, standard deviations, and results of planned independent samples *t* tests with Bonferroni corrections comparing participants who used IPV with those who did not at baseline and follow-up are presented in Table 2. At baseline, participants who perpetrated psychological IPV reported higher psychological IPV victimization, reported partner alcohol misuse, stress, depression, and lower dyadic adjustment compared to those who did not. Participants who perpetrated minor physical IPV reported higher minor physical IPV victimization, stress, depression, and lower dyadic adjustment compared to those who did not. Participants who perpetrated severe physical IPV reported lower dyadic adjustment compared to those who did not. At follow-up, participants who perpetrated psychological IPV reported higher psychological IPV victimization at baseline and follow-up, IPV perpetration at baseline, stress, depression, and lower dyadic adjustment compared to those

who did not. Participants who perpetrated minor physical IPV reported higher minor physical IPV victimization at follow-up than those who did not. No differences emerged compared to those who perpetrated severe physical IPV compared to those who did not.

Results from one-way between subjects ANOVAs with Tukey's HSD post hoc tests at baseline and follow-up are presented in Table 3. Overall, 32 participants reported an increase, 32 reported no change, and 58 reported a decrease in their IPV perpetration. Of the 32 participants who reported no change in their IPV perpetration, 10 had perpetrated at least one type of IPV at one time point. Participants in the no change group reported less stress, depression, psychological IPV victimization, and poorer dyadic adjustment at baseline than those in the reduction group. Those in the no change group also reported less stress and depression compared to those in the increase group. Participants in the reduction group reported more psychological IPV victimization at baseline compared to the increase group. Participants in the increase group reported more stress, depression, psychological IPV victimization, and poorer dyadic adjustment at follow-up compared to the no change group. The increase group also reported more psychological victimization and poorer dyadic adjustment compared to the reduction group. Finally, those in the reduction group reported more psychological IPV victimization compared to the no change group.

Results of the post hoc ANOVAs excluding the twenty-two women who did not report IPV perpetration at either

**Table 2** Results of independent samples *t* tests at baseline and follow-up

Variable	Psychological IPV		Minor physical IPV		Severe physical IPV				
	Perpetration <sup>a</sup> Mean (SD) N = 130	No perpetration <sup>b</sup> Mean (SD) N = 50	<i>t</i> (177)	Perpetration <sup>a</sup> Mean (SD) N = 38	No perpetration <sup>b</sup> Mean (SD) N = 142	<i>t</i> (177)	Perpetration <sup>a</sup> Mean (SD) N = 17	No perpetration <sup>b</sup> Mean (SD) N = 163	<i>t</i> (177)
IPV victimization	15.40 (22.54)	.08 (.34)	7.69*	5.61 (10.54)	.04 (.37)	3.17*	5.53 (12.39)	.10 (.72)	1.70
Alcohol misuse	1.84 (3.00)	1.18 (2.43)	1.37	1.73 (2.77)	1.64 (2.89)	0.18	2.75 (3.61)	1.54 (2.76)	1.62
Partner alcohol misuse	4.52 (5.85)	1.58 (2.91)	3.74*	5.97 (6.98)	3.09 (4.68)	2.62	6.24 (5.97)	3.41 (5.22)	2.10
Stress	22.83 (6.13)	19.52 (6.81)	3.13*	25.47 (4.40)	20.98 (6.63)	4.88*	25.90 (5.10)	21.50 (6.49)	2.63
Depression	18.67 (10.77)	13.17 (8.69)	3.23*	25.12 (11.42)	15.06 (9.21)	5.62*	26.08 (15.50)	16.26 (9.50)	2.49
Dyadic adjustment	113.02 (21.35)	127.36 (16.64)	-4.72*	101.19 (24.17)	120.94 (18.36)	-5.33*	98.88 (22.06)	118.83 (20.21)	-3.73*
Variable	Perpetration <sup>a</sup> Mean (SD) N = 79	No perpetration <sup>b</sup> Mean (SD) N = 43	<i>t</i> (114)	Perpetration <sup>a</sup> Mean (SD) N = 25	No perpetration <sup>b</sup> Mean (SD) N = 97	<i>t</i> (114)	Perpetration <sup>a</sup> Mean (SD) N = 15	No perpetration <sup>b</sup> Mean (SD) N = 107	<i>t</i> (114)
Baseline perpetration	18.84 (26.25)	3.42 (6.93)	3.97*	2.21 (3.50)	.91 (3.81)	1.38	.56 (.89)	.60 (4.47)	0.03
Baseline victimization	19.26 (25.21)	3.70 (6.11)	4.72*	3.16 (8.36)	1.27(5.76)	1.20	.22 (.44)	.85 (4.97)	0.38
Follow-up victimization	17.57 (24.00)	.00 (.00)	5.81*	5.74 (9.75)	.02 (.14)	2.56*	4.55 (9.49)	.23 (2.42)	1.36
Alcohol misuse	8.52 (4.17)	8.87 (3.05)	0.51	8.05 (4.35)	8.78 (3.68)	0.75	7.78 (4.44)	8.73 (3.75)	0.72
Partner alcohol misuse	3.43 (5.92)	1.32 (3.06)	2.80	5.61 (8.23)	2.08 (4.13)	1.78	9.00 (10.50)	2.09 (4.02)	1.96
Stress	21.55 (6.83)	16.41 (6.93)	3.80*	20.53 (5.40)	19.55 (7.61)	0.53	22.70 (4.50)	19.45 (7.42)	1.29
Depression	17.50 (11.27)	10.20 (9.20)	3.60*	18.00 (12.93)	14.17 (10.66)	1.38	24.11 (13.32)	14.01 (10.42)	2.69
Dyadic adjustment	111.09 (20.18)	119.27 (23.35)	-1.95	104.76 (21.79)	115.86 (21.20)	-2.07	99.16 (30.03)	115.28 (20.42)	-1.58

Baseline N = 180. Follow-up N = 122. IPV = Intimate partner violence. <sup>a</sup> Group of participants who reported at least one instance of that type of IPV perpetration. <sup>b</sup> Group of participants who did not report any of that type of IPV perpetration. *p* values derived following Bonferroni correction are reported here. Baseline \* *p* < .0021. Follow-up \* *p* < .0028. *p* values derived following Bonferroni correction are reported here

**Table 3** Results from one-way between subjects ANOVAs with Bonferroni corrections at baseline and follow-up

Variable	Group A reduction N = 58 M (SD)	Group A no change N = 32 M (SD)	Group C increase N = 32 M (SD)	F(2, 114)	Mean group differences		
					A–B	B–C	A–C
<b>Baseline</b>							
Alcohol misuse	1.64 (2.80)	1.07 (2.62)	1.77 (2.72)	.54	.57	–.70	–.13
Partner alcohol misuse	4.75 (6.29)	2.45 (3.68)	3.70 (5.17)	1.78	2.29	–1.26	1.03
Stress	22.92 (6.23)	19.20 (6.32)	24.52 (5.01)	6.13**	3.71*	–5.32**	–1.61
Depression	17.75 (10.69)	12.08 (7.87)	19.54 (11.02)	4.59**	5.67*	–7.46*	–1.79
Dyadic adjustment	109.23 (23.74)	125.11 (17.33)	118.77 (21.75)	5.66**	–15.88**	6.34	–9.54
Psychological IPV victimization	21.49 (28.08)	2.23 (7.01)	7.23 (9.53)	9.94**	19.27**	–5.00	14.26*
Physical IPV victimization	4.53 (14.57)	.13 (.72)	.27 (.87)	2.50	4.41	–.14	4.27
<b>Follow-up</b>							
Alcohol misuse	9.19 (3.02)	7.85 (3.99)	8.23 (4.97)	1.34	1.44	–.72	.72
Partner alcohol misuse	2.15 (4.45)	2.40 (3.54)	4.16 (7.62)	1.38	–.25	–1.76	–2.01
Stress	19.50 (7.24)	17.24 (7.19)	23.33 (6.31)	5.18**	2.26	–6.09**	–3.83
Depression	14.71 (11.76)	10.93 (7.96)	19.46 (11.53)	4.40*	3.78	–8.53**	–4.75
Dyadic adjustment	116.09 (16.33)	119.37 (22.27)	103.26 (27.48)	4.68*	–3.28	16.11*	12.83*
Psychological IPV victimization	6.00 (13.48)	2.26 (7.01)	24.35 (26.26)	15.51**	3.79**	–22.09**	–18.35**
Physical IPV victimization	.98 (6.58)	.13 (.72)	4.46 (12.28)	2.70	.85	–4.33	–3.48

IPV = Intimate partner violence. \*\*  $p < .01$ , \*  $p < .05$ . Mean group differences reflect results following Tukey's HSD post hoc test

time point indicated that at baseline, the reduction group reported more psychological IPV victimization than the increase group. At follow-up, the reduction group reported higher dyadic adjustment than did the increase group. The increase group also reported more psychological IPV victimization than either the reduction and no change groups.

## Discussion

Consistent with past research from other populations of women [8, 10, 18, 34], our findings highlight the influence of multiple factors in delineating those participants who perpetrated IPV from those who did not. Women who perpetrated IPV had partners with a greater severity of reported alcohol misuse, poorer dyadic adjustment, and greater depression and stress compared with those who did not perpetrate IPV. Previous studies in other populations of women have asserted that women's IPV perpetration may be attributable to self-defense against IPV victimization or the utilization of an active (albeit maladaptive) strategy for coping with IPV victimization [8, 10]. We cannot make causal attributions about our findings to suggest why women in our sample perpetrated IPV. However, comparing participants who perpetrated IPV with those who did not leads to two possible suggestions. The first is that

women's IPV perpetration in our sample may be symptomatic of global or dyadic distress, particularly because more group differences were observed between those who perpetrated psychological IPV compared to either type of physical IPV. Future research would benefit from identifying not only the occurrence, but patterns of and motivations for IPV perpetration and victimization within this population to inform intervention development. Second, regardless of why IPV perpetration occurred, it was associated with detrimental outcomes that are key indicators of mental, emotional, physical health, and parenting abilities during pregnancy and postpartum [34–36] and therefore, warrants further investigation.

In this sample, the prevalence of each type of IPV perpetration during pregnancy and postpartum was similar to the prevalence of their IPV victimization. However, a smaller subset of participants perpetrated IPV without being victimized by IPV. In order to understand possible pathways to intervention for this population, future studies should aim to investigate the precipitants and outcomes associated with IPV perpetration in the absence of IPV victimization by women during pregnancy and postpartum. Men and women often perpetrate IPV for similar reasons including the expression of anger and in response to IPV victimization or self-defense [8, 18]. Future studies could improve upon this one by including of a measure of motivations for IPV perpetration. Future

studies should aim to improve upon the present findings by including such measures and comparing the responses of those who report IPV victimization and those who do not.

Women and couples often have unprecedented access to health care professionals during pregnancy and postpartum due to the necessary frequency of visits. Therefore, this time period may provide a unique opportunity for health care providers to engage their patients in thorough screening and assessment of IPV and to provide intervention and referrals [37, 38]. Furthermore, the changes in prevalence of IPV perpetration and victimization from baseline to follow-up observed in this study emphasize the need for health care providers to thoroughly screen pregnant and postpartum patients for a wide range of IPV perpetration and victimization behaviors at multiple time points because women's IPV profiles may change over time. Despite some recent findings suggesting that IPV screening in pre- and postnatal health care settings did not reduce women's IPV victimization [37], our findings suggest a continued need for identification of IPV and appropriate referral and intervention by health care providers.

The differences between the reduction and no-change groups observed from comparisons between the increase, decrease, and no change groups in this study may initially appear counterintuitive, however, considering that the majority of the women in the no change group did not perpetrate IPV at either time point, these group comparisons may more accurately reflect differences between those who increased, decreased, or did not perpetrate any IPV. Future research should aim to include larger sample sizes which may provide greater variability in IPV experiences and statistical power to provide more accurate and informative findings regarding changes in IPV experiences over time.

Results of the post hoc group comparisons between the increase, decrease, and no change group excluding those who did not report IPV perpetration at either time point yielded few results. These findings suggest that the cessation of IPV perpetration, even if temporary during the period of time investigated here, is not related to substantial gains in areas of individual or dyadic functioning. Rather, our findings suggest that IPV perpetration by women during pregnancy and postpartum is associated with several negative outcomes in both individual and dyadic domains. Similar to past research [9, 39], these findings also highlight the role of psychological IPV victimization as a critical factor in differentiating the course of IPV perpetration over time. However, the preliminary and exploratory nature of this study suggests that these findings warrant further exploration.

### Limitations

This study is limited by several factors. The measure of women's alcohol misuse demonstrated slightly low internal

consistency, which may have influenced the relationships explored in this study. Limiting the cell size of the no change group in the group comparison analyses may have limited statistical power. Future work using larger sample sizes is warranted. Another limitation is the high attrition rate and the absence of a control group consisting of non-pregnant women. Despite the fact that women who completed follow-up assessments did not significantly differ from those who did not on any of the constructs examined here, it remains unknown if these groups differ on factors that were not investigated. Despite the longitudinal design of the present study, the relatively low endorsement of minor and severe physical IPV perpetration and victimization may limit the reliability of these findings. Further, our study design prevents us from making inferences about causality related to IPV perpetration. As with all retrospective data collections, our findings may be subject to information bias. Additionally, selection bias may have influenced the nature of our sample and the generalizability of our findings. Some studies indicate that women experiencing IPV during pregnancy are less likely to engage in prenatal care and more likely to miss prenatal visits [40, 41]. Thus, these findings should be replicated among community and treatment-seeking samples in other settings such as shelters and community clinics. Future studies should implement micro-longitudinal and mixed methods designs to address these methodological issues.

### Conclusions

Women in this study who perpetrated IPV reported higher levels of IPV victimization, partner alcohol misuse, depression, stress, and poorer dyadic adjustment compared to those who did not. These findings suggest that women's IPV perpetration is associated with negative health outcomes. Health care providers should aim to assess women's IPV perpetration and victimization at multiple time points during pregnancy and postpartum in order to provide appropriate intervention and referral information.

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