



The Prevalence of Domestic Violence and Its Association with Gestational Hypertension in Pregnant women

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Abstract

Background: Violence against women is one of the most brutal consequences of the economic, social, political, and cultural inequalities that exist between men and women. Violence can lead to less participation in social activities, unhappiness, emotional distress, and increased risks of maternal medical conditions such as hypertensive disorders of pregnancy, which are leading causes of maternal mortality worldwide.

Methods: We conducted a case-control study at Shahid-Beheshti hospital in Maragheh, Azarbaijan, Iran. About 110 women with pregnancy revealed hypertension and proteinuria (i.e., preeclampsia), and 451 normotensive women were interviewed to identify the prevalence of domestic violence. Information concerning women's exposure to physical, emotional, and sexual violence during pregnancy was collected during personal interviews conducted after delivery and while patients were in hospital. Odds ratios (OR) and 95% confidence intervals (CI) were estimated from logistic regression models.

Results: The prevalence of IPV was 56.1% among cases and 24.3% among controls. Women with some exposure to IPV during pregnancy revealed a 2.07-fold increased risk of preeclampsia compared to those who were not exposed to IPV (OR=2.07; 95% CI: 1.5-3.02). The association between IPV and preeclampsia was strengthened slightly after adjusting for maternal age, parity and pre-pregnancy adiposity (OR=2.43; 95% CI: 1.7-3.24).

Conclusions: Violence as a social issue is affected by social and cultural differences. So that, empowering of women and adolescents as a group with high risk, we can prevent it.

Keywords: Domestic violence, Preeclampsia, Pregnancy toxemia.

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I ntroduction

Domestic violence is ubiquitous across cultures, with men the main perpetrators and women the main victims, but also with observed physical manifestations. Domestic violence may be exhibited in several ways in various cultures and contexts, and no globally accepted operational definition exists.¹ The World Health Organization defines IPV as a range of sexually, psychologically, and physically coercive acts used against women by current or former male intimate partners.¹⁻⁴ Though this definition identifies men as perpetrators of violence against women (VAW), WHO later acknowledged that women can also be violent toward their male partners.² This definition was adopted by the World Health Organization's (WHO) factsheet N°239 (WHO, 2012). Intimate partner violence (IPV) is a

"behavior within an intimate relationship that causes physical, sexual, or psychological harm, including acts of physical aggression, sexual coercion, psychological abuse, and controlling behaviors" (WHO/London School of Hygiene and Tropical Medicine, 2010). Intimate partner physical domestic violence can occur at any time in life; however, such violence during pregnancy can have serious consequences. The evidences gathered from several studies reveal that pregnancy can increase the prevalence of domestic violence. Some factors causing violence during pregnancy include hormonal imbalance during pregnancy, changes in sexual relations, misconceptions about pregnancy, and increase in the economic costs.^{1,3,4} Pregnant women subjected to domestic abuse are considered at high risk because exposure to physical, sexual, or psychological violence during pregnancy correlates with increased maternal, fetal, and infant morbidity and mortality.^{5,6} Several studies have evaluated the adverse effects of domestic violence in pregnant ladies. Some of these studies verified the relationships between IPV and adverse pregnancy outcomes such as preterm delivery, intrauterine growth retardation, and death.^{3,7,8} Other studies reported maternal adverse events such as vaginal bleeding, uterine and placental abruption, and urinary tract and kidney infections.⁷⁻¹⁵ Domestic violence and hypertension may have serious health impacts like preeclampsia, and preterm delivery and fetal distress. Early screening and intervention during routine prenatal care or during episodic care in a hospital setting can help deal with domestic violence and reduce and prevent pregnancy complications.

Materials and Methods

This case-control study was conducted in 2015 on 561 patients (110 women in the group of preeclampsia and 451 in the control group). We used the easy sampling method. In the case group, the inclusion criteria were identified based on the definition of American society of cardiovascular disease of PIH (sustained blood pressures of at least 140/90 mmHg on or after 20 completed gestation weeks and on at least two instances with a time difference of 4 h). Proteinuria was defined as urine protein concentration of 30 mg/dl (or 1+ on a urine dipstick) in at least two random specimens collected with a time difference of 4 h. This diagnosis was confirmed after a gynecologist's opinion and based on the clinical and paraclinical evidences. Exclusion criterias were any inconsistency with entry criterias.

Controls included women with pregnancies, uncomplicated by PIH or proteinuria, and with a history of any disease or medication consumption. We used the well-known Cochran formula to estimate the sample size.

$$n = \frac{\frac{z^2 pq}{d^2}}{1 + \frac{1}{N} \left(\frac{z^2 pq}{d^2} - 1 \right)}$$

where $z=1.96$, $P=0.05$, $q=0.95$, and $d=0.05$.

Potential preeclampsia cases were identified by daily monitoring of all new admissions to antepartum wards, emergency room wards, and labor and delivery wards of the study hospitals. Study subjects were recruited during their hospital stay. Preeclampsia was defined by sustained PIH with proteinuria.⁷

For data collection, the researchers used the standard form of the domestic violence questionnaire along with the demographic data. It comprises two parts. The first part includes maternal demographic characteristics (age, age at marriage, previous marriage, number of children), whereas the second part includes questions related to domestic violence. In this questionnaire, physical violence was evaluated with 21 questions, sexual violence with 4 questions, and emotional violence with 7 questions.

All interviews were conducted in the hospital by the research team as per the patient's convenience (pre- or postdelivery).

The interviewers were unaware of the study hypothesis. It means that they didn't know we wanted to find a relation between preeclampsia and domestic violence. All participants provided their written informed consent prior to enrollment. Participants were informed that their health care provider would not be informed of their responses to the study questionnaires. Maternal exposure to IPV was determined by the patient's response to the question: during the last nine months (during your pregnancy) how often did your current partner or boyfriend do any of the following things to you? (the questions that were exited in the violence questionnaire).

Maternal and infant records were reviewed to collect the detailed information concerning antepartum, labor and delivery characteristics, and conditions of the newborn. Gestational age was based on the date of the last menstrual period and was confirmed by ultrasound examination performed before 20 weeks. Prepregnancy body mass index (BMI), a measure of the overall maternal adiposity, was calculated as weight in kilograms divided by the height in meters squared.

We examined the frequency distributions of maternal sociodemographic characteristics and reproductive histories, according to case and control status. Initial univariate analyses were performed in order to determine the unadjusted odds ratios (ORs) and 95% confidence intervals (CIs). Effect modification was evaluated by stratified analyses and by including appropriate interaction terms in the logistic regression models. In case of no effect modification, logistic regression procedures were used to simultaneously control the confounding variables while estimating ORs and 95% CIs. Confounders were defined as the factors that altered the unadjusted ORs by at least 10%. Final logistic regression models included confounders, as well as the covariates of a priori interest (i.e., maternal age and parity). Maternal marital status, history of smoking and alcohol consumption during pregnancy, as well as maternal employment status were also evaluated. Status and utilization of prenatal care were not confounders in this study. All analyses were performed using SPSS 18 software.

Results

Table 1 compared the demographic characteristics between two study groups (preeclampsia and non-preeclampsia). According to the results, significant differences were observed between the two study groups regarding the age, education level, marital status, parity, and body mass index ($P<0.05$ for all factors).

Table 1. Sociodemographic and reproductive information of the study population

Characteristics	Preeclampsia cases (N=110)		Control subjects (N=451)		P.V
	N	%	N	%	
Maternal age at delivery (years)					
- <20	14	12.72	35	7.76	
- 20-34	87	79.09	373	82.71	0.005
- >35	9	8.19	43	9.53	
Education level of women					
- Under primary school	3	2.72	6	1.33	
- Primary school	6	5.45	23	5.09	
- Secondary-High school	88	80	290	64.31	0.003
- University	13	11.83	22	4.87	
Education level of husband					
- Under primary school	11	10	38	8.42	
- Primary school	24	21.8	137	30.3	
- Secondary-High school	36	32.7	184	40.8	0.005
- University	39	35.4	92	20.4	
Marital status					
- The first marriage	109	99.09	447	99.11	
- >2	1	0.91	4	0.89	0.001
Number of child					
- 1	49	44.5	84	18.6	
- 2	38	34.5	185	41	
- 3	13	11.8	98	21.7	0.002
- 4	7	6.3	57	12.6	
- 5<	3	2.7	27	6	
Body mass index					
- <19.8	12	10.90	32	7.09	
- 19.8-26.0	92	83.63	404	89.59	
- 26.1-29.0	4	3.63	9	1.99	0.005
- >29.0	2	1.81	6	1.33	

Table 2. Distribution of domestic violence in the areas of physical, emotional, and sexual abuse in women with and without preeclampsia

The type of violence	Preeclampsia				P.V
	Yes		No		
	N	%	N	%	
Physical Violence	Yes	17	28.3	43	71.7
	No	93	18.6	408	81.4
Emotional violence	Yes	62	53.4	54	10.8
	No	48	10.8	397	89.2
Sexual violence	Yes	15	20.5	58	79.5
	No	95	19.5	393	80.5

Table 3. Odds ratio (OR) and 95% confidence intervals (CI) of preeclampsia in relation to experiencing domestic violence during pregnancy

Experienced domestic violence during pregnancy	Preeclampsia Cases (N=110)	Control subjects (N=451)	Unadjusted OR (95% CI)	Adjusted OR (95% CI)
- YES	62	173		
- NO	48	278	2.07 (1.5–3.02)	2.43 (1.7–3.24)

Adjusted for maternal age, parity, and body mass index

Table 2 presents the distribution of the domestic violence among pregnant women, with and without preeclampsia. According to this table, no significant difference was observed between the two groups regarding physical and sexual violence ($P>0.05$); however, for emotional violence, significant difference was seen between the two groups ($P<0.05$).

Table 3 presents the risk of preeclampsia in exposing and non-exposing domestic violence. Women who reported to have ever experienced domestic violence during pregnancy revealed a 2.07-fold increased risk of preeclampsia when compared with the women who reported never being abused during pregnancy ($OR=2.07$, 95% CI: 1.5–3.02; Table 3). This association was strengthened slightly after controlling the confounders such as maternal age at delivery, parity, and BMI ($OR=2.43$; 95% CI: 1.7–3.24).

Discussion

The results of our study are consistent with the results of several other studies conducted in Iran.^{16,17,18} In all these studies, the most frequent violence was psychological violence, followed by physical and sexual violence. This result was slightly different when compared with the results of the other studies in this area. The differences in the report of prevalence, incidence, and consequences of violence during pregnancy may be secondary due to the lack of a standard definition, variation in reports, difference in time of violence to time of delivery, sample size, confounding factors such as differences in studied populations, and ethnic differences in violence.¹⁹

Our study also revealed that the risk of preeclampsia while facing physical and emotional violence is 1.7 and 9.4 times, respectively, than non-exposure ($OR=1.7$, CI: 1.4–3.17; $OR=9.4$, CI: 5.92–15.22, respectively); however, there was an equal chance of preeclampsia exposure while facing sexual violence ($OR=1$; CI: 0.58–1.9).

We are unaware of the studies that have assessed the risk of preeclampsia in relation to maternal exposure to IPV during pregnancy. Our finding of an increased risk of preeclampsia associated with maternal exposure to IPV, however, is consistent with two previous reports that focused on the occurrence of pregnancy-induced hypertension (PIH) among

abused pregnant women.^{9,4} This possible association may be due to the physical and psychological stress, depression, anxiety, isolation and loss of social support, and low self-esteem in the pregnant women who are affected by preeclampsia. These groups of women may also be less likely to have access to the prenatal care and are drawn to risky behaviors such as use of tobacco, alcohol, and illegal drugs.^{10,20}

This hypothesis was supported by the studies that revealed that the exploited pregnant women have higher levels of stress and lower emotional support from their sexual partners, than the control group the literature justified that facing with domestic violence can produce and release some stress mediator that lead to preeclampsia.^{11,17-20}

Syksto et al. conducted a case-control study in Peru. They concluded that the prevalence of domestic violence in the case group (preeclampsia) was 43.1% and in the control group (pregnant women with normal blood pressure) was 24.3%, which is indicative of higher incidence rate among patients. Moreover, pregnant women that experience domestic violence during pregnancy reported 4.2 folds chance of preeclampsia to women who had never had experienced violence during pregnancy ($OR=2.4$; 95% CI: 3.3–1.7). In this study, researchers also concluded that the prevalence of emotional violence in the treatment group is more than the control group (43.1 % vs. 24.3 %), and that psychological violence alone increases chances of preeclampsia as 2.3 times ($OR=3.2$; 95% CI: 2.1–4.9). None of the subjects in this study reported physical violence alone in the absence of psychological violence. In this study, physical and psychological violence are able to increase the chances of preeclampsia by 1.9 times ($OR=1.9$; 95% CI: 1.1–3.5). In a study by Syksto et al., two types of violence (physical and emotional violence) were evaluated. The results of our study and Syksto et al.'s study were similar in this regard.⁶

Another study by Silverman et al. reported that exposure to domestic violence increases the chances of hypertension by about 0.94 times ($OR=0.94$; 95% CI: 74–1.18). In this study, the prevalence of domestic violence was estimated to be 3.7%. Sadly, more detailed results of this study could not be reported.⁸

The results of the present study had certain limitations. First, our analyses are based on the cross-sectionally collected data which may be subject to recall bias. Longitudinal studies are needed to re-examine the potential causal relation between maternal exposure to IPV and preeclampsia risk. Second, the questionnaire used in the present study was geared mainly to evaluate the traditional medical risk factors of preeclampsia, thus limiting our capabilities to fully access multiple dimensions of IPV during pregnancy. Additionally, our assessment of maternal exposure was limited only to the period during pregnancy; hence, we were unable to identify women who may have experienced physical, sexual, or emotional violence prior to the pregnancy study.

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Conflict of Interest

The authors declared that they have no conflict of interest.

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