



Research Article

The Association between Intimate Partner Violence (IPV) During Pregnancy and Birth Weight

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Abstract

Introduction

Intimate partner violence is referred to actual or threatened abuse by an intimate partner. These abuses are including sexual, physical, psychological, or emotional which can cause indirect adverse fetal health effects including low birth weight and intrauterine growth retardation. The results of some studies explain that the violence during pregnancy can affect the birth weight. The purpose of this research is therefore to examine Intimate partner violence during pregnancy and low birth weight.

Materials and Methods

This is a correlation-descriptive analytical study. It was performed on 843 females that they were victims of violence (physical, psychological, and sexual) in Zahedan in south-east of Zahedan, Iran, in 2008-2009. The sampling method was multistage random-quota sampling. The inclusion criteria were singleton pregnancy, full-term (37-42 gestational weeks), passing four hours after childbirth, and exclusion criteria included a history of medical diseases, smoking, and violence by someone other than the husband. All data were entered in SPSS for Windows (Version 18.0, SPSS Inc., Evenston, Illinois) and analyzed using statistical tests such as Chi-square, t-test by statistician.

Results

The results indicated that some types of psychological violence such as "threatening to divorce" and "disrespecting and swearing among other people" and some types of sexual violence like "oral or rectal intercourse" and "any other sexual violence by the husband" associated with birth weight, but physical violence and birth weight had not significant relationship ($P > 0.05$).

Conclusion

The psychological violence was the most frequent type of violence in Zahedan that it associated with birth weight in Zahedan.

Keywords

Pregnancy; Intimate Partner violence; Birth weight; Psychological; Relationship

Introduction

Intimate partner violence (IPV) is defined as an actual or threatened abuse by an intimate partner that may be physical, sexual, psychological, or emotional in nature. Each year approximately 1.5 million women in the United States report some form of sexual or physical assault by an intimate partner; it is estimated that approximately 324,000 women are pregnant when violence occurs. The violence against women is a global health problem that occurs among all races and all socioeconomic strata [1-3]. Pregnancy IPV is a significant problem worldwide, with rates varying significantly by country and maternal risk factors. Pregnancy IPV is associated with adverse newborn outcomes, including low birth weight (LBW) and preterm birth. Domestic violence, often exerted by the spouse, includes various types of physical, sexual, and psychological traumas [1,2]. This fundamental universal health problem was introduced as an epidemic 20 years ago. A reduction in IPV was announced as a goal of health service providers in 2010 [1]. Investigations in different countries showed that 15-71% of women had experienced physical and sexual violence in their lifetime [1,3]. In Iran, various types of violence comprise 27-83% [2]. Given that most of the violence victims are women of reproductive age [3-6], the occurrence of the violence may increase during pregnancy by 1-20% as reported by previous studies [1,4]. Women victim of domestic violence experience more medical and psychosocial complications than other women [7-10]. Different reports revealed that the IPV during pregnancy associated with unfavorable pregnancy outcomes [5,9]. Low birth weight (LBW) is one of the complications threatening pregnant women victim of violence [4,5]. There are numerous mechanisms for defining the correlation between experience of violence and LBW and other unfavorable outcomes of pregnancy [1]. Certain outcomes result from direct physical violence like trauma to the abdomen that can lead to premature labor, premature rupture of membranes (PROM), and placental abruption, and these complications themselves may cause birth weight lower than 2500 g [1]. Reports of two other smaller scale studies also include significant associations between physical IPV during pregnancy and low birth weight. Furthermore, mothers' medical diseases such as hypertension and gestational diabetes in pregnant women victim of domestic violence are more than those in other women [6]. These diseases can cause premature labor, fetal growth retardation (FGR), and consequently LBW [1,6]. Victim women of domestic violence are also exposed to the risk of psychological diseases like depression and anxiety [2,11]. Moreover, stress causes the release of catecholamine, beta-endorphin, and cortisol through neuroendocrine axis, and these hormones cause vasospasm, fetal asphyxia, and intrauterine growth retardation (IUGR). The release of prostaglandins causes premature rupture of membranes and preterm delivery [9,12]. Despite the presentation of this mechanism, no definite correlation has been proved between IPV and LBW. Considering the importance of infants' birth weight and its effect on mortality rate, which is an effective index in determining health status of a country, and the unproved effect of violence on birth weight, the researchers decided to conduct a study on the correlation between physical, sexual, and psychological violence and birth weight in women admitted to postpartum ward of three major hospitals of Zahedan, Iran in 2008-2009.

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Materials and Methods

This was a correlation- descriptive analytical study. The research places were included post-partum wards of Ali-Ebn-Abitaleb, Tamin-Ejtemai, and Nabi-ye Akram hospitals, Zahedan, Iran in 2008-2009. These hospitals are public and major hospitals that majority of female clients were referred for seeking medical cares.

Sample size and sampling methods

Regarding 5.5-6.6% prevalence of violence, 5.8% prevalence of LBW [12], confidence level of 95%, and power 80% and error rate of 5%, the sample size was estimated 843 participants. The samples were selected using multistage random-quota sampling method. The number of samples in each hospital was estimated in proportion to the number of childbirths in that hospital. The quota was determined based on mean childbirths in each hospital in one month. Therefore, at the Tamin-Ajtemai Hospital (342 questionnaires), Ali-Ibn-Abitaleb Hospital (300), and Nabi-ye Akram Hospital(201) were filled out by samples.

Including & excluding criteria

The women included in the study had full-term (37-42w) singleton pregnancy, and at least four hours had passed from their childbirth. The women with history of medical diseases, smoking, and violence by one other than the partner were excluded.

Instruments validity & reliability

The data were collected using a self-administered questionnaire. It consisted of four parts including eight items for demographic information, seven items for midwifery information, some items for neonate characteristic birth weight, and violence-related questions. Violence-related questionnaire consisted of four items for physical violence (yes/no), five times for psychological violence (yes/no), and five items for sexual violence (yes/no). The validity of the questionnaire was determined with content validity and face validity by a panel of expert. The reliability of the questionnaire was determined as 0.71 by Cronbach's alpha.

Selected participants

The researchers went to postpartum wards of the hospitals and selected eligible women who based on three items for physical violence (1- Have you been beaten by your husband during the last year or your current pregnancy?), psychological violence (2- Are you afraid of your husband?), and sexual violence (3- Have you ever been forced to have sex with your husband?) For different types of violence. Participation was voluntary and the responses were kept unidentified. The women were enrolled if they gave a positive response to any of the following it, then asked the response of the other items of questionnaire.

Data analysis

All data were tabulated and analyzed using SPSS for Windows Version 18.0, SPSS Inc., Evenston, Illinois). Mean and standard deviations of the scores were calculated. Initially, the Kolmogorov-Smirnov test was performed to identify whether the study variables had normal distribution. Then, the Chi-square and t-test were used. All the tests were performed at significance level of 0.05.

Results

Mean age of the 843 studied women was 26.2 years, of which,

15.8% and 54.7% were adolescent and adult women, respectively. Maximum level of literacy in mothers and fathers were high school education. Minimum and maximum percentages of LBW were observed in women with high school education and women with middle school education, respectively, as 139 women (16.5%) had a history of LBW. In this study, 80.3% of women were housewife, and 310 women (36.8%) had unwanted pregnancy. In terms of income Emdad Committee were 7% under coverage and 69% of women stated that their family income was sufficient. In respect to the prenatal care, totally 87.7% of women received prenatal care, and 63.8% of them received the care more than four times. The results showed that 207 women (24.6%) had experienced physical violence during the last year, and 128 women (15.2%) had experienced physical violence during their pregnancy. In this study, physical violence associated with LBW (Table 1).

The analyses revealed that maximum violence intensity was related to threatening, and minimum intensity of physical violence was related to permanent damage or the use of guns and cold weapons and the resulted wounds (Figure 1).

The results showed that the most frequent type of psychological violence was "being offended and insulted," and the least frequent type of psychological violence was "little attention due to the child's sex". In this study, physical or emotional violence used by the husband was important for 67.5% of women. Only psychological violence affected on birth weight (Table 2). Examining the study samples revealed that the most frequent sexual violence was "forced to have sexual intercourse during pregnancy," and the least frequent sexual violence was "forced to have sexual intercourse during menstruation." Certain types of violence associated with LBW (Table 3). In general, mean weight of the infants in the group victim of violence was 247.1 g lower than that of infants in the group no victim of violence. However, the independent *t* test did not show any significant difference in mean weight of the two groups ($P>0.05$) (Table 4).

Discussion

In this study, 24.6% of women experienced violence during the last year, and 15.2% of them experienced violence during pregnancy. These percentages show a downward trend indicating the special attention of the husbands to their wives during pregnancy. The above result is comparable to that of studies performed in other parts of the world, based on continents. In general, the prevalence of violence in the USA and developing countries is 1-20% and 4-28%, respectively [13]. There are different statistics (8.5-50%) in Iran [14-17], even in one province; as the prevalence of mild and severe types of physical violence in Northeast (Mashhad) of Iran were 0.3% to 93.1%, and respectively [18] maybe due to the method of questioning, secrecy regarding cultural context of the region, type of measurement instrument, sample size, etc. In other Asian countries like Hong Kong, 296 women (9.1%) experienced violence during one year, of

Table 1: The association of physical violence and birth weight.

Violence	Violence past year	Violence during pregnancy
Birth weight	N(%)	N(%)
≥ 2500	173(83.6)	100(78.1)
<2500	34(16.4)	28(21.9)
test chi-square	0/03=p 24/4=x ² Df=1	0.001>p X ² =12/62 Df=1

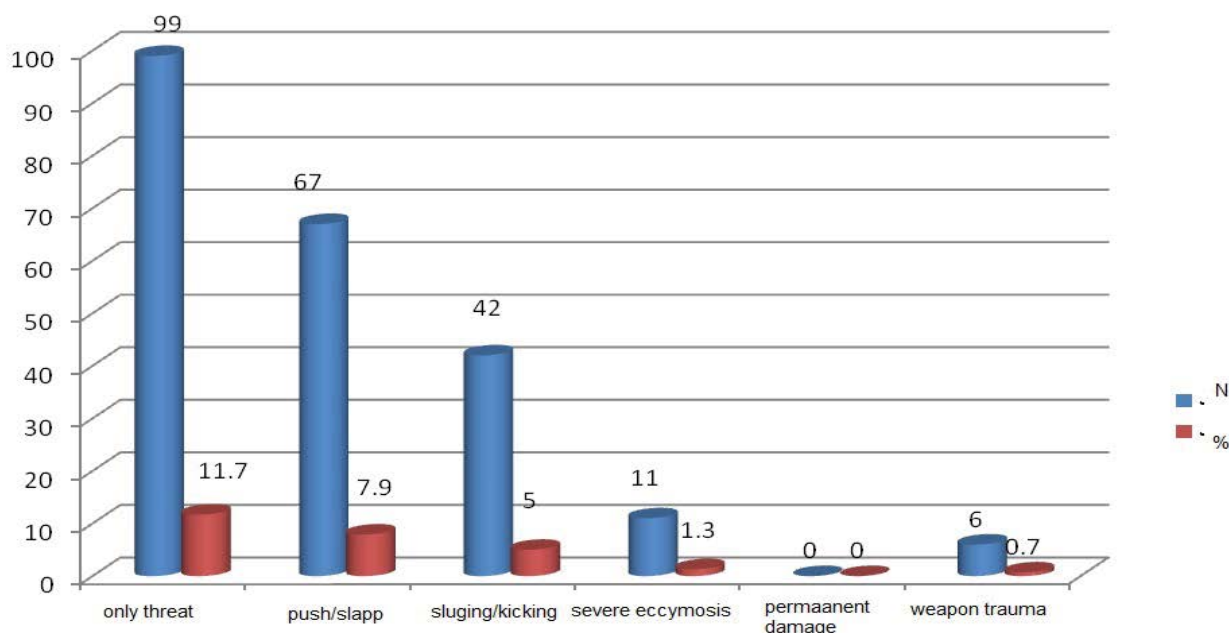


Figure 1: Types of intensity physical violence.

Table 2: The association of psychological violence with birth weight.

Birth weight	Type of violence	Low attention to the child sex	Threatened to divorce	Disrespect & insult in front of people	Insulting & cursing
		N (%)	N (%)	N (%)	N (%)
≥ 2500		63(79.7)	46(86.8)	125(82.5)	233(85)
<2500		16(20.3)	7(13.2)	26(17.2)	41(15)
Chi Square test		P=0.84 X ² =0.04 df=1	P=0.02 X ² =5.05 df=1	P=0.04 X ² =4.05 df=1	P=0.10 X ² =2.59 df=1

Table 3: Determining the associate of a variety of sexual violence with LBW.

Birth weight	Type of violence	Force to any other type of sexual violence	Force to intercourse during pregnancy	Force to intercourse during menstruation	Force to have oral or rectal intercourse	Force to intercourse
		N (%)	N (%)	N (%)	N (%)	N (%)
≥ 2500		61(78.2)	218(85.5)	25(89.3)	36(76.6)	189(85.5)
<2500		17(21.8)	37(14.5)	3(10.7)	11(23.4)	32(14.5)
Chi Square test		P=0.008 X ² =7.10 df=1	P=0.20 X ² =1.59 df=1	P=0.79 X ² =0.07 df=1	P=0.01 X ² =5.63 df=1	P=0.25 X ² =1.27 df=1

Table 4: Mean and standard deviation of birth weight in two groups (violence/no violence).

History of violence during last year	Variable (index)	birth weight (g)		T test
		Mean	SD	
Yes (n=207)		2872.5	500.4	t=-1.70 df=841 p=0.08 mean difference=-247.1
No(n=636)		3119.7	2063.1	

which, 80 women (27%) were being abused physically or sexually during pregnancy [13]. In China, the violence during pregnancy and the violence one year before pregnancy were reported as 4.3% and 9.1%, respectively, as the violence before pregnancy was a strong factor of using violence during pregnancy [19,20]. The result agrees with this study.

In the present study, physical or psychological violence by husband was important 67.5% by viewpoints of women. The result was comparable with a study had conducted in South and Southeast of Tehran, as the women in Tehran found the emotional violence as the more important one than other types of violence [21]. In Northern Iran (Babol), 71% of women mentioned psychological

symptoms [22]. In Northeastern Iran (Mashhad), mild and severe types of psychological violence were reported as 81.1% and 1.7%, respectively [18]. In Northwestern Iran (Urmia), 25.7 of women experienced psychological violence [17]. In Western Iran (Marivan), the emotional violence before pregnancy and during pregnancy was reported as 67.9% and 54.3%, respectively [16]. In Southwestern Iran (Shahr-e-Kord), psychological violence was reported as 51.7% [15]. The percentage of fear from husband in this study was considerable. It seems that the percentage of psychological violence against women is high in all continents including Asia. Therefore, the health providers are suggested to consider the psychological violence used by husbands in their consultation-based screening more carefully. In the present study, the most frequent type of sexual violence was being forced to have sex during pregnancy, which showed the unawareness of the women of the way of sexual intercourse during pregnancy and their fear of the possible harm to the fetus. In this regard, the women's stress and subsequent adverse effects of pregnancy can be reduced through increasing awareness of the women.

In western Iran (Marivan), the sexual violence before pregnancy and during pregnancy was reports as 69.5% and 55%, respectively [16]. In Southwestern Iran (Shahr-e-Kord), sexual violence during pregnancy was 0.4% [15]. In Iran (Mashhad), very mild and severe types of sexual violence were reported as 95.2% and 0.3%, respectively [18]. It seems that the prevalence of sexual violence was lower than that of other types of violence, which may be due to the religious context of each region. However, Iranian women's failure to tell the truth due to their shame was a limitation of such studies in Iran.

Moreover, in Romania, domestic violence is a serious problem in which social, cultural, and religious factors are influential [23]. It seems that all the studies show the violence before pregnancy as a strong risk factor for continuation of this behavior in pregnancy. However, the percentage of the risk factor decreases from culture to culture, and the decrease in Islamic countries is under the influence of Islamic teachings. Regarding the specific cultural, social, and geographical features of Zahedan, the domestic violence in this province was remarkable in the few studies performed in this regard, but the frequency of severe types of violence, such as murder of wife, was lower than that of other provinces [24].

Mean weight of the infants in the group victimized v/s to not victimized physical violence was 247.1 g lower. Although the difference was close to the significance level, a larger sample size may change the result. In a case-control study in Iran, the correlation of birth weight with physical violence was significant, whereas the correlation of birth weight with psychological, verbal, and sexual violence was not significant [25]. A study in the USA and the present study also did not show such a correlation [26].

A study in Central America (Nicaragua) performed on 147 pregnant women and a study in Africa (Uganda) showed a decrease in birth weight by 121-186 g [27,28]. The decrease in weight may be due to the stress caused by any type of violence (physical, psychological, and sexual) used by the husband and the subsequent secretion of cortisol. The correlation between the violence during pregnancy and increased cortisol was proved in the above study [29].

The effect of cortisol on vasoconstriction reduces the uteroplacental blood flow, and consequently, fetus receives less food and oxygen as its weight gain decreases.

A study reviewing the 6-year reports showed that violence during pregnancy had a significant correlation with reduced birth weight [30].

The non concurrence of the result of the present study with that of certain studies may be due to the cultural context of women in Zahedan. The women's non-confidence to disclosure has been proved also in Northwest and West America, as only 2% of 1000 women under screening revealed their experience of violence during pregnancy. It seems that there are barriers affecting the declaration of violence or declaration of violence severity, of which, fear has been reported as a barrier in the USA [31]. In the present study, 27.5% of women feared of their husbands, of which, 12.9% had infants with weight lower than 2.5 kg.

in this study Some types of violence correlated with birth weight Similar other studies [32], and a study only showed the correlation with physical violence [25]. In the islands of the USA (South Caroline), physical violence before pregnancy had adverse effects on the pregnancy outcomes including LBW [33]. This result conforms to that of another study in the USA [34]. In other studies, the violence had affected pregnancy outcomes if it occurred around or during pregnancy [35]. Boy's study showed the correlation of physical and psychological violence with LBW, and a review study in the USA found the LBW as an adverse effect [36]. In a review and meta-analytical article in Canada, physical violence was determined as an important cause of LBW [37]. The correlation of physical violence with unfavorable outcomes of pregnancy has been proved in Asian countries (Bangladesh) [36,38]. In Bangladesh, the correlation of sexual violence with unfavorable outcomes of pregnancy was proved [38]. In this respect, psychological and sexual violence affect the fetus more than other types of violence, which necessitates special attention. Self-care education is emphasized because it leads in active role in treatment process and accepting responsibility for individual health [39]. Social networks are used for behavior improvement, educational performance and other self-care education [40].

A challenge for midwives, in relation to safe motherhood, is to use appropriate strategies, such as collaborative learning, positive deviations, and so forth, in order to lead [mothers] to the safe motherhood in while screening and care providing. That is the objective that should be planned and implemented in curriculum of the comprehensive health plan of universities according to the Iranian leader's recommendation. It is hoped that more effects into these patients bring appropriate treatment methods to promote the patients' life quality [41].

The limitation was in this study, women often not talked about threatening injuries. The reason of non-disclosure may be their fear although the study performed on all Iran's provinces showed that Sistan-Balouchestan province had the lowest percentage of injuries resulting in murder [24]. Thus, the occurrence of serious injuries must be less probable. Moreover, regarding the cultural context of the province, men pay more attention to their wife during pregnancy.

Finally, 274 women experiencing the psychological violence of "being offended and insulted", 255 women experiencing the physical violence of "being forced to have sex during pregnancy," 207 women experiencing sexual violence during the previous year, and 128 women experiencing sexual violence during pregnancy. In this respect, the psychological violence was the most frequent type of violence in Zahedan. The result of the study indicated that mean birth weight in the group victim of violence was 247.1 g lower than that of mean birth weight in the group no victim of violence. However, the independent t-test did not show any significant difference in mean weight of the two groups ($P > 0.05$).

Ethical Considerations

The written consent letter was taken from Postpartum Wards and the managers of hospitals for study. The participants announced her consents orally and completed questionnaires. Ethics Committee of Zahedan University of Medical Sciences has approved this research.

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References

- Arefi M (2003) Descriptive Study of Domestic Violence against Women in Orumiye. *JWSPS* 1: 120.
- Ahmed S, Koenig MA, Stephenson R (2006) Effects of domestic violence on perinatal and early childhood mortality: Evidence from North India. *Am J Public Health* 96:1423-1428.
- Altarc M, Strobino D (2002) Abuse during pregnancy and stress because of abuse during pregnancy and birthweight. *J Am Med Womens Assoc* 57:208-214.
- Ansari H, Parisae Z, Rahimi ERF (2008) Assessment of Relationship between Violence Exposure Pregnancy and Low Birth Weight: a case-control study. *J Jahrom Univ Med Sci* 6: 17-26.
- Asay S (2011) Awareness of domestic violence within the Evangelical Community: Romania and Moldova. *J Fam Viol* 26:133-138.
- Audi CAF, Segall-Corrêa AM, Santiago SM, Pérez-Escamilla R (2012) Adverse health events associated with domestic violence during pregnancy among Brazilian women. *Midwifery* 28:356-361.
- Bailey BA (2010) Partner violence during pregnancy: Prevalence, effects, screening, and management. *Int J Women's Health* 183-197.
- Bakhtiyari AON (2003) Study of the Reasons and Effects of Violence against Women in their Family in people referring to the Forensic Center in Babel. *SJOFM* 9:127-131.
- Behnam HR, moghadam hosseini V, soltanifar A (2008) Domestic violence against the Iranian pregnant women. *Ofofge-E-Danesh* 14:70-76.
- Boy ASH (2004) Intimate partner violence and birth outcome: systematic review. *Int J Fertil Womens Med* 49:149-164.
- Bullock L, Bloom T, Davis J, Kilburn E, Curry MA (2006) Abuse Disclosure in Privately and Medicaid-Funded Pregnant Women. *J Midwifery Women's Health* 51: 361-369.
- Coker AL, Sanderson M, Dong B (2004) Partner violence during pregnancy and risk of adverse pregnancy outcomes. *Paediatr Perinat Epidemiol* 18: 260-269.
- Cokkinides VE, Coker AL, Sanderson M, Addy C, Bethea L (1999) Physical violence during pregnancy: Maternal complications and birth outcomes. *Obstet Gynecol* 93: 661-666.
- Devries KM, Kishor S, Johnson H, Stöckl H, Bacchus LJ, et al. (2010) Intimate partner violence during pregnancy: Analysis of prevalence data from 19 countries. *Reprod Health Matters* 18: 158-170.
- Dolatian M, Hesamy K, Zahiruddin A, Velaie NAMH (2012) Prevalence of Domestic Violence and its Relationship on Mental Health. *Pejouhandeh* 16: 277-283.
- Fried LE, Cabral H, Amaro H, Aschengrau A (2008) Lifetime and during pregnancy experience of violence and the risk of low birth weight and preterm birth. *J Midwifery Women's Health* 53: 522-528.
- Guo SF, Wu JL, Qu CY, Yan RY (2004) Domestic abuse on women in China before, during, and after pregnancy. *Chin Med J* 117: 331-336.
- Hashemi Nasab L (2007) Assessment of prevalence, outcome and factors related to domestic physical violence in pregnant women referring to delivery departments of Sanandaj hospitals. *J Kurdistan Univ Med Sci* 11:71-76.
- Hesami k, Dolatian M, Shams J (2010) Domestic Violence Before and during Pregnancy among Pregnant Women. *IJN* 23: 51-59.
- John IA, Lawoko S, Svanström L (2011) Screening for Intimate Partner Violence in Healthcare in Kano, Nigeria: Extent and Determinants. *J Fam Violence* 26:109-116.
- Khodakarami N, Naji H, Dashti MG, Yazdjerdi M (2009) Woman abuse and pregnancy outcome among women in Khoram Abad, Islamic Republic of Iran. *East Mediterr Heal J* 15: 622-628.
- Sh M (2004) Criminology of Domestic Violence and spouse-murder in Sistan-Baluchestan. *J Wom Res* 2: 39-53.
- Murphy C, Schri B (2001) A risk factor for low birth weight? A systematic review and meta-analysis. 164: 48-65.
- Panaghi L, Ghahari SHYH (2006) Victims talk about factors involved in domestic violence: A Qualitative study. *J Fam Res* 2:257-267.
- Salehi SMH (2006) The prevalence and types of domestic violence against pregnant women referred to maternity clinics in Shahrekord. *J Shahrekord Univ Med Sci* 8: 72-77.
- Saltzman LE, Johnson CH, Gilbert BCGM (2003) Physical abuse around the time of pregnancy: an examination of prevalence and risk factors in 16 states. *Matern Child Heal J* 7: 31-43.
- Sanchez SE, Qiu C, Perales MT, Lam N, Garcia P, et al. (2008) Intimate partner violence (IPV) and preeclampsia among Peruvian women. *Eur J Obstet Gynecol Reprod Biol* 137:50-55.
- Sarkar NN (2008) The impact of intimate partner violence on women's reproductive health and pregnancy outcome. *J Obstet Gynaecol* 28: 266-271.
- Seng JS (2002) A conceptual framework for research on lifetime violence, posttraumatic stress, and childbearing. *J Midwifery Women's Health* 47: 337-345.
- Silverman JG, Gupta J, Decker MR, Kapur N, Raj A (2007) Intimate partner violence and unwanted pregnancy, miscarriage, induced abortion, and stillbirth among a national sample of Bangladeshi women. *BJOG An Int J Obstet Gynaecol* 114:1246-1252.
- Silverman JG, Decker MR, Reed E, Raj A (2006) Intimate partner violence victimization prior to and during pregnancy among women residing in 26 U.S. states: Associations with maternal and neonatal health. *Am J Obstet Gynecol* 195:140-148.
- Small MJ, Gupta J, Frederic R, Joseph G, Theodore M, et al. (2008) Intimate partner and nonpartner violence against pregnant women in rural Haiti. *Int J Gynecol Obstet* 102: 226-231.
- Taillieu TL, Brownridge DA (2010) Violence against pregnant women: Prevalence, patterns, risk factors, theories, and directions for future research. *Aggres Violent Behav* 14-35.
- Urquia ML, O'Campo PJ, Heaman MI, Janssen PA, Thiessen KR (2011) Experiences of violence before and during pregnancy and adverse pregnancy outcomes: an analysis of the Canadian Maternity Experiences Survey. *BMC Pregnancy Childbirth* 11: 42.
- Valladares E, Ellsberg M, Pena R, Hogberg UPL (2002) Physical partner abuse during pregnancy: A risk factor for low birth weight in Nicaragua. *Obs Gynecol* 100:700-705.
- Valladares E, Peña R, Ellsberg M, Persson LA, Högborg U (2009) Neuroendocrine response to violence during pregnancy—impact on duration of pregnancy and fetal growth. *Acta Obstet Gynecol Scand* 88: 818-823.
- Valladares E, Peña R, Persson LA, Högborg U (2005) Violence against pregnant women: Prevalence and characteristics. A population-based study in Nicaragua. *BJOG An Int J Obstet Gynaecol* 112:1243-1248.
- Yount KM, DiGirolamo AM, Ramakrishnan U (2011) Impacts of domestic violence on child growth and nutrition: a conceptual review of the pathways of influence. *Soc Sci Med* 72: 1534-1554.
- Raufmehrpour Z, Arbabisarjou A (2005) Effect of education on self-care in hemodialysis patients. *Transplant International*. 267: 71.
- Azizollah A, Balouchi A, Balouchi M (2015) Application of Social Networks among high schools students in Sistan and Baluchistan, Iran. 7: 161-167.
- Ansari H, Kamani H, Arbabisarjou A (2007) Prevalence of Hepatitis C and related factors among B- thalassemia major Patients in Southern Iran in 2005-2006. *J Med Sci* 7: 997-1002.

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