Original Research Article

Violence in the shadows: how intimate partner violence shapes pregnancy outcomes in rural Uttar Pradesh, India

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ABSTRACT

Background: Globally, nearly 30% of women experience intimate partner violence (IPV), and in India, NFHS-5 reports that 27% of women face physical and 6.7% sexual violence by their husbands. IPV during pregnancy increases maternal stress and is associated with adverse birth outcomes, including low birth weight and preterm birth. This study examines the association between psychosocial conditions within intimate partnerships and adverse birth outcomes in a rural setting of Uttar Pradesh.
Methodology: A case–control study was conducted in Raebareli district, Uttar Pradesh, including 425 recently delivered women (212 cases with LBW/preterm births and 213 controls without low-birth-weight babies).
Results: Approximately 20% (83/425) of women reported experiencing IPV (physical or emotional) during pregnancy. Among these, 72.9% had adverse outcomes. Specifically, 63 women (75%) had LBW infants, and 34 women (40%) reported physical violence such as hitting, slapping, or pushing (OR=4.32; 95% CI: 2.02–9.27; z=3.7), indicating a statistically significant association between IPV and adverse outcomes. Conversely, 193 women (45%) reported receiving high levels of emotional and practical support from their partners. Among them, 61% delivered normal birth weight babies, with partner support reducing the risk of LBW by 22% (OR=0.459; 95% CI: 0.31–0.67; p<0.001).
Conclusion: IPV is strongly associated with adverse pregnancy outcomes, whereas partner support acts as a protective factor in rural Uttar Pradesh.

Keywords: Intimate partner violence, Family support, Partner support, Adverse pregnancy outcomes, Preterm birth, Low birth weight babies

INTRODUCTION

Domestic violence against women, commonly referred to as IPV, remains a universal global public health and social challenge. The World Health Organization defines IPV as any behavior within an intimate relationship that results in physical, psychological, or sexual harm to a partner.[1] Globally, nearly 30% of women experience IPV, and an estimated 4–12% encounter physical or sexual violence during pregnancy. The burden is disproportionately higher in low- income regions, with IPV prevalence reaching 65.64% in Central Sub-Saharan Africa and 41.73% in South Asia, compared with 27.85% in Central Europe and 21.32% in North America.[2] IPV not only undermines the physical and mental health of women but can also adversely affect child health and development.[3]

Maternal well-being is vital for the health of families and communities and remains a major public health priority. Although antenatal care (ANC) coverage has improved in India, neonatal mortality has not declined at the same pace. The neonatal period (the first 28 days of life)

continues to be the most vulnerable time for child survival. India accounts for nearly one-fifth of global live births and contributes substantially to neonatal deaths, with about 0.75 million neonatal deaths reported in 2013.[4] According to NFHS-5, the neonatal mortality rate is 24.9 per 1,000 live births nationally, and much higher in Uttar Pradesh (35.7).[5,6] Preterm birth and low birth weight (LBW) remain key causes of neonatal illness and death, particularly in low-resource settings.[7]

Similarly, growing evidence indicates that pregnancy may heighten a woman's vulnerability to violence due to shifts in relationship power dynamics, increased emotional demands, and heightened financial strain associated with pregnancy and childcare. These factors may exacerbate tensions within households, increasing the likelihood of IPV.[8] According to NFHS-5, 29.3% of Indian women report physical violence by their partners, and 3.1% experience physical violence during pregnancy. In Uttar Pradesh, these proportions are even higher, at 34.8% and 3.7%, respectively.[5,6]

IPV during pregnancy has been linked to a range of detrimental maternal and fetal outcomes, including preterm birth, LBW, fetal injury, maternal anxiety, depression, post-traumatic stress disorder (PTSD), and maternal mortality.[2,9] A cohort study from Brisbane, Australia, showed that women experiencing intimate partner violence were more likely to require acute obstetric care and hospital admission during pregnancy. This highlights the significant impact of IPV on pregnancy-related health and service use.[10]

Conversely, social support is a protective psychosocial factor that can positively influence neonatal health. Women with strong social support networks tend to have better pregnancy outcomes, including lower rates of preterm birth and higher birth weights.[11]

Stress, trauma, and poor use of antenatal care among women experiencing IPV can restrict fetal growth and lead to low birth weight. Physical violence and high stress may also trigger preterm labour, increasing risks for preterm birth and Low birth weight newborns. Therefore, preventing IPV and strengthening partner and family support during pregnancy are crucial for improving maternal and neonatal outcomes.[9,12]

Despite the growing global evidence, limited studies have explored the combined influence of IPV and family support on pregnancy outcomes among rural women in Uttar Pradesh, one of India's highest burden states for neonatal mortality. This study aims to examine the association between intimate partner violence, partner support, and adverse birth outcomes, specifically LBW and preterm birth, among rural women in Uttar Pradesh. We hypothesize that there is no significant association between IPV or partner support and pregnancy outcomes (Low birth weight babies and or Preterm births).

METHODS

Study design

This study employed an observational, case–control design to examine the association between family and partner support during pregnancy and adverse birth outcomes, specifically low birth weight (LBW) and preterm birth, among postpartum women in Raebareli district, Uttar Pradesh. Data were collected from women who delivered between October 2024 and January 2025.

Study setting

The study was conducted in Raebareli district, located in the state of Uttar Pradesh, India. Raebareli district was purposively selected due to its epidemiological relevance and public health importance.

The demographic structure of Raebareli district is characterized by a predominantly rural population, with approximately 91% of residents living in rural areas and only 9% in urban areas, with documented a high burden of low birth weight and preterm births. Health Management Information System (HMIS), Uttar Pradesh portal data indicated consistently high LBW prevalence across multiple blocks (~19% LBWs against the live births).[13,14]

Sample size and sampling procedure

The sample size was estimated based on the following assumptions: a two-sided 95% confidence interval ($Z_{1-\alpha/2}=1.96$), 80% power ($Z_{1-\beta}=0.84$), a 1:1 case to control ratio, an expected exposure prevalence of 20% among controls (P_0), and an anticipated odds ratio of 1.8, indicating a moderate association.[15]

The final sample comprised 212 cases and 213 controls, resulting in a total of 425 participants. Cases and controls were selected from the same geographical blocks and similar socio-economic and cultural backgrounds to reduce confounding at the design stage.

Study participants and case–control selection

Data were obtained through retrospective interviews with recently delivered women to assess experiences of intimate partner violence, family and partner support, and substance use during pregnancy. Information on birth weight and gestational age was extracted from ASHA Facilitators' line list records.

Participants were categorized as follows.

Cases

Women who delivered a low-birth-weight infant (<2500 grams) and/or had a preterm birth (<37 weeks' gestation).

Controls

Women who delivered infants without low-birth-weight babies. To minimize confounding related to background characteristics, controls were matched to cases on key socio, demographic variables, including education, household income, and cultural background. To avoid the influence of early postpartum emotional fluctuations on the quality of responses, it ensured that the selected women would be interviewed after the 2 weeks of delivery, but then again within three months postpartum.

Inclusion and exclusion criteria

Women who had given consent and delivered a live-born infant within the preceding 14 days to three months were included in the study to ensure accurate recall of pregnancy-related care and support received during the antenatal period. To minimize biological confounding factors that could independently influence birth outcomes, women who were underweight (BMI<18.5 kg/m²), severely anaemic (haemoglobin <7 g/dl), diagnosed with gestational diabetes mellitus (blood glucose >140 mg/dl), or had pregnancy-induced hypertension (blood pressure >140/90 mmHg) were excluded from the study. These conditions are known independent risk factors for LBW and preterm birth and could bias the association between support systems and birth outcomes.

Study tool

Data were collected using a structured quantitative questionnaire developed with reference to the Antenatal Psychosocial Health Assessment (ALPHA) tool. The instrument was pre tested to ensure contextual appropriateness, following which modifications were made, including revisions to item wording and sequencing. Reliability testing yielded a Cronbach's alpha value of 0.833, indicating good internal consistency and confirming that the tool was suitable for use in the study. Purposive sampling was employed, and retrospective interviews were conducted to gather information using the specified tool. Data collection was conducted in accordance with ethical protocols, ensuring informed consent and maintaining the confidentiality of participants.

RESULTS

A p value <0.05 was considered statistically significant. Binary logistic regression analysis was conducted to identify factors associated with adverse birth outcomes. Results were presented as odds ratios (ORs) corresponding 95% CIs and p value.

Characteristics of women in the case and control groups

Table 1 shows that mothers' mean age of cases was 25.16±3.28 years, while controls had a mean age of 25.87±3.62 years. The trend analysis showed the difference was not sufficient to confirm age as a contributing factor (χ^2=2.95, p=0.23). Similarly, the mean age at marriage among women in both groups was very similar. Women with LBW or preterm births (cases) had a mean marriage age of 22.09 years, while those with normal outcomes (controls) had a mean age of 22.34 years. (χ^2=0.64, p=0.726). Thus, maternal age and age at marriage does not appear to play a major role in determining adverse birth outcomes in this study population.

Further, the statistical analysis of maternal education revealed no significant association between the educational level of women and the birth weight of their babies (χ^2=3.25, p=0.20).

Besides, the analysis suggested that the income source did not have a statistically significant association with whether a baby was born with low or normal birth weight (χ^2=3.05, p=0.22). Even the socioeconomic status (as measured by the composite score, based on the modified Kuppuswamy scale 2023) does not significantly influence birth outcomes like low birth weight or preterm delivery (χ^2=1.88, p=0.39). Further Table 1 had shown parity was also not significantly associated with adverse birth outcomes (χ^2=0.90, df=2, p=0.64), with a greater proportion of multiparous women (those having more than two children) among both cases (56%) and controls (59%). Likewise, birth spacing did not show any significant association with birth outcomes (χ^2=1.41, df=2, p=0.49) across both the case and control groups.

The majority of deliveries took place in public health facilities (87%), indicating strong institutional delivery coverage; however, no statistically significant association between the place of delivery and the likelihood of low birth weight or preterm birth (p=0.414) was found.

Overall, no significant association was found between LBW or preterm births and maternal age, age at marriage, education and socioeconomic status which implies that the distribution of these variables is similar across the two groups of cases and controls. The lack of significant association across all the variables show that there is a similar distribution of these occurrences/incidents in both the groups, which establishes their comparability (Table 1).

Family and partner support

Further analysis of family support revealed a significant association with birth outcomes. Women reporting low levels of support were disproportionately represented among the LBW and preterm cases, whereas higher levels of support were more common among controls. Both family and partner support independently and jointly provide protective shield against adverse birth outcomes (preterm and low birth weight). Women with family support had 76% lower odds of LBW or preterm birth (OR=0.24; p<0.001) and women who reported to have

received partner support during pregnancy had 77% lower odds of adverse birth outcomes (OR=0.23; p<0.001). More than single support, it is the combined support which is most beneficial. Women with both (family and partner) supports had 85%–90% lower odds of LBW/preterm (OR=0.15; p<0.0001), highlighting the synergistic effect of dual support systems. Women with neither family nor the support of spouse had more than 10-times higher odds of adverse outcomes (OR=10.47; p<0.0001). With only spousal support without family support, the odds of adverse outcomes were slightly elevated (OR=1.17; p=0.011), suggesting that although beneficial, spousal support alone cannot fully offset the lack of family support. Further, in cases where the family supported but the spouse did not, a significant protective effect (OR=1.06; p=0.004).

The present study found that women who received both family and partner support had 85-90% lower odds (OR≈0.15; p<0.0001) of delivering a low birth weight or preterm baby, and women with neither family nor partner support experienced more than a 10-fold higher risk (OR≈10.47; p<0.0001). This suggests a powerful synergistic protective effect of dual support systems, beyond what single sources of support appear to confer, and underscores the potential importance of integrated support networks in maternal health (Table 2).

Intimate partner violence and pregnancy outcomes

The findings indicated a strong association between partner violence and adverse pregnancy outcomes. In this study, 83 women (approximately 20% of the total sample of 425) reported experiencing violence, either physical or emotional, perpetrated by their partner. Among these women, 29.7% belonged to the group that delivered low birth weight or preterm babies, compared to only 9.4% in the group with normal birth outcomes. Specifically, 10% of all women reported experiencing physical violence (e.g., hitting, slapping, pushing) during pregnancy. A significantly higher proportion of women with adverse birth outcomes reported experiencing physical abuse by their partner during pregnancy compared to controls (16.0% vs. 4.0%). The association between partner physical abuse during pregnancy and low birth weight or preterm birth was statistically significant (χ^2=15.03, df=1). Further data was summed up in 2×2 table and found that, women who experienced physical abuse during pregnancy had over four times higher odds of delivering a low birth weight or preterm infant compared to women who did not report such abuse (OR=4.33; 95% CI: 2.02–9.27; p<0.001).

A significantly higher proportion of women with adverse birth outcomes reported experiencing emotional abuse by their partner during pregnancy compared to controls (14.0% vs. 5.0%). The association between partner emotional abuse during pregnancy and low birth weight or preterm birth was statistically significant (χ^2=8.06, df=1, p=0.005). Women who experienced emotional abuse during pregnancy had nearly three times higher odds of delivering a low birth weight or preterm infant compared to women who did not report such experiences (OR = 2.91; 95% CI: 1.41–5.99; p=0.005) (Table 3). Collectively, family partner support during pregnancy showed a protective association. Women who received consistent emotional support, involvement in antenatal care, and shared responsibility from their partners were substantially less likely to experience adverse birth outcomes. Conversely, lack of family support and intimate partner violence (IPV) is significantly associated with adverse pregnancy outcomes.

Table 1: Women Characteristics in Case and Control Groups.

Characteristics /Item	Cases (women with LBW/Preterm)	Controls (Women without LBW/preterm)	Chi-Square (χ^2)	df	P value
N	212	213			
Age of the Respondent	%	%			
Mean age (in years)	25.16	25.87			
18 to 24	47	40			
25 to 30	48	51	2.95	2	0.23
>30	6	9			
Age of the respondent at the time of marriage					
Mean age at marriage (in years)	22. 09	22.34			
18 to 24	84	82			
25 to 30	15	17	0.64	2	0.73
>30 years	1	1			
Education of the women					
Illiterate	16	14			
Primary up to 5th Class	19	21			
Junior secondary (6 to 8th)	29	24			
High School (9th & 10th)	11	12	3.25	6	0.2
Intermediate (11th & 12th Class)	12	14			
Graduate	12	14			
Postgraduate and above	0	1			

Continued.

Characteristics /Item	Cases (women with LBW/Preterm)	Controls (Women without LBW/preterm)	Chi-Square (χ^2)	df	P value
Type of family					
Nuclear	18	20			
Joint	82	80	0.12	1	0.94
Socioeconomic class of the respondent					
Lower	16	15			
Upper lower	74	70			
Lower middle	10	13	1.88	4	0.39
Upper middle	0	1			
Parity					
Primi	5	3	0.9	2	0.64
<2 Two children	40	38			
More than 2 children	89	59			
Period of spacing between the current and previous birth					
>2.5 years spacing	3	4			
1.5 to 2.5 years spacing	86	89	1.39	2	0.5
<1.5 years spacing	6	4			
Place of delivery					
Public facility	88	87			>0.05
Private facility	10	13	1.52	2	
Home	1	0			

Table 2: Association of family and spousal support with pregnancy outcomes.

Category	Cases (women with LBW/Preterm)		Controls (Women without LBW/preterm)		OR	P value
N	212		213			
	N	%	N	%		
Received family's support	43	20	110	52	0.24	<0.001
Received spouse's support	123	58	183	86	0.23	<0.001
Received both Family and spouse's support	21	10	89	42	0.15	<0.001
Received only spouse support	102	48	94	44	1.17	0.011
Received only Family Support	22	10	21	10	1.06	0.004
Received neither family nor partner support	67	32	9	4	10.47	<0.001

Table 3: Intimate partner violence (IPV) during pregnancy and Birth outcomes.

Characteristics /Item	Cases (women with LBW/ Preterm)		Controls (Women without LBW/ preterm)		Total		Odd Ratio (OR)	95% CI	P value
N	212		213		425				
	N	%	N	%	N	%			
Total IPV (Physical and emotional both)									
Yes	63	30	20	9	83	20	4.080	2.362 to 7.0478	<0.0001
No	149	70	193	91	342	80			
Women experienced physical abuse									
Yes	34	16	9	4	43	10	4.329	2.021 to 9.274	0.0002
No	178	84	204	96	382	90			
Women faced emotional abuse									
Yes	29	14	11	5	40	9	2.910	1.4132 to 5.9923	0.0037
No	183	86	202	95	385	91			

DISCUSSION

The findings of this study demonstrate a strong and consistent association between IPV, family support, partner support, and adverse pregnancy outcomes such as LBW and preterm birth. Women who experienced physical or emotional abuse during pregnancy had significantly higher odds of delivering LBW or preterm infants compared to those who did not experience violence. These results align with extensive global evidence indicating that IPV during pregnancy is a significant predictor of poor maternal and neonatal outcomes. Studies from India and other low middle-income countries have similarly reported that women exposed to violence are two to four times more likely to deliver LBW or preterm infants.[2,15] The mechanism is often explained through chronic maternal stress, elevated cortisol levels, and reduced antenatal care uptake, all of which adversely affect fetal growth and gestational duration.[9]

In this study, women who experienced IPV had more than four times the odds of delivering LBW infants, reinforcing the argument that violence is not only a violation of women's rights but also a critical public health concern. This is consistent with a meta-analysis, which highlighted that physical and emotional violence significantly increase the risk of fetal growth restriction and preterm delivery.[16] The findings further emphasize the need for integrating IPV screening and support systems within routine maternal health programs in India. Family support emerged as another important determinant of birth outcomes. Women reporting high levels of emotional and practical support from their families had significantly lower odds of adverse pregnancy outcomes. This protective effect is in line with studies showing that social support reduces maternal stress, improves coping capacity, and enhances adherence to antenatal care guidelines all of which contribute to better fetal development.[17,18]

Research from rural India has similarly shown that joint-family structures and emotional involvement of family members can buffer the effects of socioeconomic stressors and improve maternal health behaviors.[19] The graded pattern observed in this study, where lower levels of family support correspond to progressively higher rates of LBW and preterm births, echoes findings from global literature on the importance of psychosocial support during pregnancy. Partner support during pregnancy showed a similarly strong protective association. Women who received consistent emotional support, involvement in antenatal care, and shared responsibility from their partners were substantially less likely to experience adverse birth outcomes. The 78% reduction in the odds of LBW/preterm births observed in this study aligns with evidence demonstrating the beneficial effects of supportive male involvement in maternal health. Studies have shown that supportive partners improve maternal mental health, reduce stress, increase antenatal care

utilization, and promote healthy maternal behaviors.[20] A meta-analysis found that partner involvement is associated with a significant reduction in LBW and preterm births, mirroring the results of the present study.[21] These findings underscore the importance of fostering supportive marital relationships and creating social environments that encourage partner participation throughout pregnancy. Overall, the converging evidence from this study and existing literature highlights the critical role of psychosocial environments, particularly safety, emotional support, and caring relationships in shaping pregnancy outcomes. IPV increases maternal stress, disrupts health, seeking behaviour, and directly affects fetal growth, while strong family and partner support mitigate these risks through psychological buffering, improved maternal well-being, and better adherence to antenatal care. These results underscore the urgent need for integrated maternal health interventions that address both social and behavioural determinants, including IPV prevention, counselling services, and integration of family and partner engagement strategies within existing maternal and child health programs.

Strength

The study has several strengths, including a robust case–control design, a large and representative sample of postpartum women, and a comprehensive assessment of psychosocial factors such as partner violence, family support, and emotional care, which are often underexplored in maternal health research. The use of both categorical and graded support measures, along with rigorous statistical analyses, enhanced the reliability of the findings and demonstrated clear dose–response patterns.

Limitations

However, the study also has limitations. Data were self-reported postpartum, making the findings susceptible to recall bias and social desirability bias, particularly regarding sensitive issues like intimate partner violence. The study was conducted in a single district, which may limit generalizability to other settings, and the prevalence of violence may be underestimated due to cultural stigma. Despite these limitations, the study provides strong and contextually relevant evidence on the influence of partner violence and social support on adverse pregnancy outcomes

CONCLUSION

Intimate partner violence adversely impacts pregnancy outcomes, while partner support emerges as a protective factor and helps in better neonatal health in rural Uttar Pradesh. The study has found that IPV is significantly associated with adverse pregnancy outcomes such as LBW and preterm birth. This indicates that women exposed to partner violence (exposed group) have a 4.08 times higher risk of low birthweight babies than in the

non-exposed group. Strengthening male involvement in maternal care could help reduce adverse birth outcomes. Besides physical aggression such as pushing, slapping, or beating, women who are emotionally abused by their husbands are 2.16 times more likely to give birth to LBW babies or preterm birth. These results show that IPV is detrimental to the health of mothers and newborns. On the other hand, partner support is postulated to act as a protective factor in that women with high partner support had about 78% lower odds of delivering a low birth weight or preterm baby compared to women with low support. Therefore, this means that building supportive relationships during pregnancy can greatly improve the health of the mother and the birth outcomes.

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