

ASSESSING THE IMPACT OF PRENATAL INTIMATE PARTNER VIOLENCE ON BIRTH OUTCOMES AND MATERNAL MENTAL HEALTH IN DA NANG CITY

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ABSTRACT

Background: High rates of Prenatal Intimate Partner Violence (p-IPV) can lead to severe health and social consequences for both the woman and the fetus. This study aimed to assess the impact of p-IPV on birth outcomes and several maternal mental health issues in Da Nang city.

Methods: A birth cohort study was conducted from January 2023 to June 2024 across 28 wards and communes in Da Nang city. The study included 753 mother-infant pairs, followed from birth up to 12 months postpartum.

Results: The study found that p-IPV had a significant impact on birth outcomes, leading to higher rates of obstetric complications (with relative risks (RR) = 4.78), preterm birth (RR = 3.38), and low birth weight (RR = 3.99). Additionally, p-IPV was associated with increased rates of postpartum depression 6 months post-delivery (RR = 1.32) and 12 months post-delivery (RR = 1.30). Negative impacts were also observed in child development at 6 months (RR = 1.98) and 12 months (RR = 1.85), and in child nutritional status, with relative risks for underweight, stunting, and wasting ranging from 1.40 to 1.89.

Conclusions: Prenatal Intimate Partner Violence has serious consequences for both mothers and their children. These findings highlight the urgent importance of preventing and supporting pregnant women experiencing violence to protect the health of both mother and child.

Keywords: Prenatal Intimate Partner Violence, postpartum depression, child development, child nutrition.

I. BACKGROUND

Violence against women, including pregnant women, remains a serious and persistent public health problem, especially in the current context. Prenatal Intimate Partner Violence (p-IPV) is a fairly common phenomenon in Vietnamese families. In Quang Nam in 2018, the rate of p-IPV was 24.9% [1], while in Da Nang (2023), this figure rose to 32.9% [2].

Prenatal Intimate Partner Violence causes serious health and social consequences for both the mother

and the developing fetus [3-5]. Furthermore, p-IPV can lead to adverse birth outcomes, ranging from the aforementioned adverse outcomes to preterm birth for the fetus and potentially maternal mortality [6]. Therefore, early identification and intervention for p-IPV are necessary to reduce adverse outcomes, as they are potentially preventable. For these reasons, this study was conducted with the objective of assessing the impact of p-IPV on birth outcomes and Maternal postpartum mental health in Da Nang city.

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II. MATERIALS AND METHODS

2.1. Study Subjects

Mothers and children from birth up to 12 months postpartum in Da Nang city were selected from a list of 1235 pregnant women in phase 1 of the study [2].

Inclusion criteria: Living/residing in Da Nang city throughout the follow-up period and agreeing to participate in the follow-up study.

Exclusion criteria: Refusing to continue participating in the follow-up study after childbirth, moving out of Da Nang city before completing the follow-up data collection points, or being lost to contact/follow-up after multiple attempts.

2.2. Research methods

Study design: A birth cohort study was conducted from January 2023 to June 2024 in 28 wards and communes in Da Nang city.

Sample size and sampling method: The study was conducted on 753 mother-infant pairs from birth up to 12 months postpartum. After the 12-month follow-up period, 638 mother-infant pairs remained. The subjects were selected for the study sample from the list of 1235 pregnant women in phase 1 of the study [2].

Variables and assessment methods:

Exposure variable: History of violence during pregnancy was assessed using the modified Conflict Tactics Scale (CTS2) with a Cronbach's alpha reliability of 0.81 [7].

Outcome variables:

Adverse birth outcomes: Including obstetric complications, preterm birth, and low birth weight.

Maternal postpartum mental health: Focused on postpartum depression 6 months and 12 months post-delivery. This variable was assessed using the PHQ-9 scale with a reliability of 0.84 [8].

Child development: Assessed the risk of developmental disorders in children at 6 months and 12 months of age. Child development was assessed using the ASQ-3 questionnaire issued by the Ministry of Health [9].

Child nutritional status: Including underweight, stunting, and wasting at 6 months and 12 months of age [10].

Data collection methods: Research data were collected according to a standardized procedure by thoroughly trained researchers. Information was primarily collected through direct interviews with study subjects using a structured questionnaire and from available data sources. The collection process was carried out at commune/ward health stations. All collected information was checked for completeness and accuracy before being entered into the database. The confidentiality of study participants' information was always ensured throughout the data collection and processing.

2.3. Data analysis

Collected data were cleaned and coded before being entered into Epidata 3.1 software and analyzed using SPSS 22.0 software. Descriptive analysis was performed to present the characteristics of the study sample. To compare the incidence rates of adverse outcomes between the abused and non-abused groups, the Chi-square (χ^2) test or Fisher's exact test was used. The association between exposure and outcomes was assessed by the Relative Risk (RR) with a 95% confidence interval (95% CI). A statistically significant difference was considered when the p-value < 0.05.

III. RESULTS

The study was conducted on 753 mothers and children from childbirth and followed up to 12 months postpartum. There were three assessments: at birth, at 6 months postpartum with 753 mothers and children, and at 12 months postpartum with 638 mothers and children. The main results are presented below:

3.1. Impact of prenatal intimate partner violence on adverse birth outcomes for mothers and children in Da Nang city

The results show that pregnant women who experienced violence had a higher rate of obstetric complications, preterm birth, and low birth weight children compared to the non-abused group. The relative risk ratios (RR) ranged from 3.38 to 4.78 and were all statistically significant ($p < 0.05$), except for the obstetric complications variable, which had a wide confidence interval but still reached statistical significance ($p = 0.022$) (Table 1).

Table 1: Impact of prenatal intimate partner violence on adverse birth outcomes for mothers and children in Da Nang City

Exposure Variable		Outcome variables - Birth outcomes		RR (95% CI)	p
		Yes, n (%)	No, n (%)		
		Obstetric complications (n=753)			
p-IPV	Yes	6 (2.7)	216 (97.3)	4.78 (1.21 - 18.96)	0.022
	No	3 (0.6)	528 (99.4)		
		Preterm birth (n=753)			
p-IPV	Yes	41 (18.5)	181 (81.5)	3.38 (2.16 - 5.30)	< 0.001
	No	29 (5.5)	502 (94.5)		
		Low birth weight (n=753)			
p-IPV	Yes	35 (15.8)	187 (84.2)	3.99 (2.38 - 6.69)	< 0.001
	No	21 (4.0)	510 (96.0)		

3.2. Impact of prenatal intimate partner violence on maternal postpartum mental health in Da Nang City

Women who experienced violence during pregnancy had a higher risk of postpartum depression at both 6 months post-delivery (RR = 1.32; p = 0.032) and 12 months post-delivery (RR = 1.30; p = 0.036) (Table 2).

Table 2: Impact of prenatal intimate partner violence on the rate of postpartum depression 6 months and 12 months post-delivery in Da Nang city

Exposure Variable		Outcome Variable - Postpartum depression		RR (95% CI)	p
		Yes, n (%)	No, n (%)		
		Postpartum depression 6 months (n=753)			
p-IPV	Yes	68 (30.6)	154 (69.4)	1.32 (1.03 - 1.70)	0.032
	No	123 (23.2)	408 (76.8)		
		Postpartum depression 12 months (n=638)			
p-IPV	Yes	68 (35.8)	122 (64.2)	1.30 (1.02 - 1.66)	0.036
	No	123 (27.5)	325 (72.5)		

3.3. Impact of prenatal intimate partner violence on child development postpartum in Da Nang City

The risk of children having developmental disorders at 6 months and 12 months of age was higher in the group whose mothers experienced violence during pregnancy, with RRs of 1.98 and 1.85, respectively (p < 0.001 for both time points) (Table 3).

Table 3: Impact of prenatal intimate partner violence on child development at 6 months and 12 months of age in Da Nang city

Exposure Variable		Outcome Variable - ASQ3		RR (95% CI)	p
		Yes, n (%)	No, n (%)		
		Child developmental disorder at 6 months (n=753)			
p-IPV	Yes	43 (19.4)	179 (80.6)	1.98 (1.36 - 2.87)	< 0.001
	No	52 (9.8)	479 (90.2)		
		Child developmental disorder at 12 months (n=638)			
p-IPV	Yes	47 (24.7)	143 (75.3)	1.85 (1.31 - 2.60)	< 0.001
	No	60 (13.4)	388 (86.6)		

3.4. Impact of prenatal intimate partner violence on the nutritional status of children in Da Nang City

The results show a statistically significant difference in the rates of underweight, stunting, and wasting between the group of children whose mothers experienced violence and the group whose mothers did not experience violence at 6 months and 12 months. The RR ranged from 1.40 to 1.89 and were statistically significant with $p < 0.05$ for most indicators, except for the wasting indicator at 6 months ($RR = 1.06$; $p = 0.774$), which was not statistically significant (Table 4).

Table 4: Impact of prenatal intimate partner violence on the nutritional status of children at 6 months and 12 months postpartum in Da Nang City

Exposure Variable		Outcome Variable – Nutritional Status		RR (95% CI)	p
		Yes, n (%)	No, n (%)		
		Underweight at 6 months (n=753)			
p-IPV	Yes	34 (15.3)	188 (84.7)	1.63 (1.08 - 2.44)	0.019
	No	50 (9.4)	481 (90.6)		
		Stunting at 6 months (n=753)			
p-IPV	Yes	58 (26.1)	164 (73.9)	1.40 (1.06 - 1.86)	0.021
	No	99 (18.6)	432 (81.4)		
		Wasting at 6 months (n=753)			
p-IPV	Yes	28 (12.6)	194 (87.4)	1.06 (0.70 - 1.61)	0.774
	No	63 (11.9)	468 (88.1)		
		Underweight at 12 months (n=638)			
p-IPV	Yes	24 (12.6)	166 (87.4)	1.66 (1.02 - 2.73)	0.043
	No	34 (7.6)	414 (92.4)		

Exposure Variable		Outcome Variable – Nutritional Status		RR (95% CI)	p
		Yes, n (%)	No, n (%)		
		Stunting at 12 months (n=638)			
p-IPV	Yes	45 (23.7)	145 (76.3)	1.66 (1.18 - 2.33)	0.004
	No	64 (14.3)	384 (85.7)		
		Wasting at 12 months (n=638)			
p-IPV	Yes	24 (12.6)	166 (87.4)	1.89 (1.13 - 3.14)	0.014
	No	30 (6.7)	418 (93.3)		

IV. DISCUSSION

Impact of Prenatal Intimate Partner Violence on adverse birth outcomes: The results reveal a concerning finding: Prenatal Intimate Partner Violence is associated with a higher risk of problems occurring at birth. In fact, the link between violence and obstetric complications is not new and has been pointed out by many studies worldwide [3, 4, 6]. In this study, pregnant women in Da Nang who experienced violence had a higher risk of preterm birth. This result is entirely consistent with many other studies, both in Vietnam and other countries worldwide, which also show a link between violence and preterm birth [3]. Another important finding in our study is the strong association between p-IPV and the risk of their children being born with low birth weight (less than 2500 grams). Another study in Hanoi in 2014-2015 even indicated that pregnant women who experienced physical violence had an almost 6 times higher risk of giving birth to low birth weight infants (OR = 5.7) [3].

Impact of Prenatal Intimate Partner Violence on maternal postpartum mental health: The study shows that p-IPV is associated with a higher risk of postpartum depression, both at 6 months and 12 months after childbirth, compared to those who did not experience violence. This means that violence during pregnancy can have long-lasting effects on the mother's mental health. Our results are consistent with other studies worldwide. A study in Ethiopia indicated that women who had experienced any form of intimate partner violence during pregnancy had an

almost twofold higher risk of postpartum depression [5]. A study by Dang Thi Anh Thu et al. (2022) found that the rate of newly diagnosed depression in the group of mothers who did not experience violence was 18.1%, and in the group of mothers who experienced violence was 38.1% [11].

Impact of Prenatal Intimate Partner Violence on child development: The results show that p-IPV is a factor that increases the risk of subsequent child developmental delays. Other studies have also shown that even children witnessing violence can lead to developmental problems. One study showed that children living in violent environments had an average IQ score 8 points lower than children living in peaceful environments [12]. Although our study focused on p-IPV, this result suggests that a violent family environment, even if the mother is the one enduring it, can negatively impact a child's intellectual development.

Impact of Prenatal Intimate Partner Violence on child malnutrition: Prenatal Intimate Partner Violence is related to their children being malnourished in the first 12 months of life. The extent of the impact may vary depending on the type of malnutrition (underweight, stunting, wasting) and the time of assessment. Other studies worldwide have also recorded a link between maternal abuse and poor child nutritional status. A systematic review, which synthesizes the results of many different studies, concluded that maternal suffering from violence increases the risk of young children being malnourished [13].

V. CONCLUSION

The study shows that Prenatal Intimate Partner Violence leaves serious consequences, including obstetric complications, preterm birth, and postpartum depression in mothers, and problems such as developmental disorders and poor nutritional status in children. These findings emphasize the urgent need for timely prevention and intervention regarding Prenatal Intimate Partner Violence to protect the physical and mental health of both mother and child.

Declaration of conflicting interests

The authors declare no conflicts of interest with respect to the research, authorship, and/or publication of this article.

Ethical approval statement

The study was approved by the Ethics Committee in Biomedical Research of Hue University of Medicine and Pharmacy under approval code H2022/500 dated October 20, 2022.

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