

Assault during pregnancy can lead to low birth weight and pre-term babies

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Physical assault during pregnancy, especially in the third trimester, can significantly increase the rates of babies born at very low birth weights (under 3.3 pounds) and very pre-term (fewer than 34 weeks gestation), according to a study published by researchers at Princeton University, Stanford University and the University of Michigan. Credit: Egan Jimenez, Princeton University, Woodrow Wilson School of Public and International Affairs

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The researchers merged birth records with the locations of reported assault crimes reported by the New York City Police Department, which responded to almost 200,000 domestic violence incidents in 2017.

To understand the toll of violence on [pregnancy](#), they compared women assaulted during pregnancy (from conception up to the ninth month) with women who reported assault after giving birth.

They found that babies born to mothers assaulted during pregnancy were 66 percent more likely to be [low birth weight](#) and 39 percent more likely to be born pre-term compared to babies born to mothers who reported being assaulted after giving birth.

Babies born to mothers assaulted during pregnancy were also 50 percent more likely to have low one-minute Apgar scores—a test administered minutes after birth that assesses infant health—than mothers who reported being assaulted after giving birth.

"While assault of post-partum women is equally horrifying, our intent is to highlight the toll of violence during pregnancy on children as well as mothers. Pregnancy offers a window for possible intervention given that pregnant women see caregivers frequently," said study co-author Janet M. Currie, the Henry Putnam Professor of Economics and Public Affairs at Princeton's Woodrow Wilson School of Public and International Affairs.

These health impacts also create significant economic disparities. Taking into account medical fees, projected lifelong earnings and other factors,

assault during pregnancy has an average cost of \$41,771, according to the researchers' estimations. Given that 2.6 percent of pregnant women experience assault each year, this translates to \$4.25 billion annually.

The findings, published as a working paper in the National Bureau of Economic Research, highlight how health disparities can perpetuate economic inequality across generations.

"Our findings provide new evidence about the large and intergenerational social cost of violent crime, they suggest that intra-family conflict may be an important and previously understudied mechanism by which early-life health disparities perpetuate persistent economic inequality across generations," Currie said.

Thirty-two percent of U.S. women currently report experiencing violence by an intimate partner. This violence often escalates during pregnancy, which can lead to significant lifelong disadvantages for infant health and economic prosperity.

To understand the effects of this violence, Currie and co-authors Michael Mueller-Smith of the University of Michigan and Maya Rossin-Slater of Stanford University used three datasets to explore the impacts of assaults during pregnancy: [birth records](#), reported crimes between 2004 and 2012, and a database of building characteristics, or the type of home where the violence occurred (single-family home versus apartment).

Birth data came from the New York City Department of Health and Mental Hygiene's Office of Vital Statistics and included race, age and education as well residential addresses, full maiden names and dates of birth for the mothers' children.

The researchers linked this data with crime data collected by the NYPD,

which included the location of the event and the date, time and degree of the offense. Because of their focus on [physical assault](#), the researchers only included reports of felony or misdemeanor assaults for women from conception through nine months. As the comparison group, they looked at women who reported assault 10 to 19 months after conception.

They combined this with data from the New York City Department of City Planning, which is a database detailing the building types across the city. Given that it can be hard to pinpoint which apartment unit experienced a crime, they looked at mothers in single-family homes only. Of course, it is possible that the reported assault could have affected another household member, one who is not pregnant or a new mother. So, the researchers adjusted their calculations for this limitation.

The result was a sample size of 1,941 births in the Bronx, Brooklyn and Queens. Manhattan was excluded, since few mothers live in single-family homes there, and Staten Island was dropped due to its differing demographic and socioeconomic characteristics from those in the other boroughs.

The mothers who were most likely to have an assault during pregnancy were young (less than 20 years old), non-Hispanic black, and had less than a high school education. Assaults in the third trimester significantly increased the likelihood of babies being born prematurely and at low birth weights. Assaults were also associated with an increased likelihood of induced labor, which was likely a medical response to the trauma.

The researchers performed what they called a "back-of-the-envelope" calculation to estimate the average social cost generated by assault during pregnancy. To do this, they took into account higher rates of infant mortality, increased medical costs at and immediately following [birth](#), increased costs associated with childhood disability, decreases in adult income, increased medical costs associated with adult disability, and

reductions in life expectancy.

This resulted in a social cost ranging between \$16,000 and \$90,000 per child born to an assault victim, and the total annual social cost in excess of \$4.25 billion.

"The costs of crime are crucial for evaluating policy decisions. These estimates can be used to determine the cost-effectiveness of interventions on public programs," Currie, who also directs Princeton's Center for Health and Wellbeing, said. "Our results imply that interventions that can reduce violence against [pregnant women](#) can have meaningful consequences not just for the women (and their partners), but also for the next generation and society as a whole."

Future research may explore longer-term consequences of prenatal exposure to assaults on child health and development, as well as on maternal well-being, the researchers concluded.

The study, "Violence While in Utero: The Impact of Assaults During Pregnancy on Birth Outcomes," appeared on the NBER's website in July 2018. As a working paper, it was not peer-reviewed or subject to the review by the NBER Board of Directors that accompanies official NBER publications.

Provided by Princeton University, Woodrow Wilson School of Public and International Affairs

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