

Exposure to Oil and Gas Fracking Sites Linked to Adverse Birth Outcomes

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Abstract

Policymakers and regulators are urged to take note as evidence mounts.



Figure:

National Nurses United RNs march for clean energy in Philadelphia. Photo courtesy of National Nurses United.

Living near hydraulic fracturing (fracking) sites before conception and during pregnancy increases the risk of adverse birth outcomes, according to a study published online April 4 in *JAMA Pediatrics*.

Among suspected causes are pollutants released into the air and water supply from chemicals used in the fracking process, which involves injecting a water-based solution at high pressure into shale rock to cause fractures, thereby allowing gas or petroleum trapped in the shale to be tapped.

The researchers examined five years of data (2013-2018) on more than 26,000 pregnant individuals living within 10 kilometers of at least one fracking well in Alberta, Canada, during the year prior to conception or during pregnancy.

After adjusting for possible confounders, the researchers found a significant association between residential proximity to fracking and infants born small for

gestational age or with major congenital anomalies. The risk of being small for gestational age increased significantly as did spontaneous preterm birth when study participants lived within 10 kilometers of 100 or more wells.

“Exposure in both the preconception period and during pregnancy showed increased risk of several adverse outcomes, but exposure in only 1 of the 2 time periods had no association,” the authors wrote. “Together, these results suggest that the association of hydraulic fracturing is not in proximity but in the density of operations in a given area and the cumulative amount of exposure an individual may have.”

The Canadian study adds to the small body of literature linking fracking with adverse birth outcomes. One U.S. study, published in *Epidemiology* in March 2016, examined birth outcomes in Pennsylvania, where fracking wells were first installed in 2005 and numbered 3,689 by 2013. Researchers conducted a retrospective cohort study of 9,384 mothers and their 10,496 newborns using Geisinger Health System electronic health record data from 2009 to 2013. After accounting for confounding variables, the researchers found the odds of preterm birth increased with the mother's cumulative exposure to fracking, a finding echoed by the Canadian study.

A November 2019 *Environment International* study of 3,324 Colorado infants born between 2005 and 2011 in counties with 20 or more oil and gas wells per 10,000 births found a similar association. The children of mothers most exposed to oil and gas activity from three months prior to conception through two months' gestation—the critical period for fetal heart development—had significantly greater odds of being born with congenital heart defects than their matched controls.

Researchers hypothesize a variety of ways in which fracking may be influencing birth outcomes. The process generates air pollution, seismic activity, increased traffic, and noise. It also involves dozens of chemicals with the potential to contaminate drinking water.

“Because the process uses a proprietary blend of ingredients, we don't know exactly what residents are exposed to, but with fracking going on in people's backyards, the exposure is 24/7,” Katie Huffling, executive director of the Alliance of Nurses for Healthy Environments, told *AJN*. “Policymakers need to factor in the long-term health and educational costs associated with preterm birth before signing off on these projects,” she added. “While it can take years for cancers and other health issues to develop in adults and children, these exposures are likely putting them at risk for adverse health outcomes.”

In April, Physicians for Social Responsibility released a compendium of the latest findings on the risks fracking poses to human health and the environment. It is available at www.psr.org/blog/resource/fracking-compendium-8.—Nicole Fauteux

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