University Study Links Fetal Distress with Maternal Hurricane Exposure

Washington, D.C. – Exposure to hurricanes can cause significant adverse fetal distress risks and can lead to longer-term health care problems for affected children, scientists have determined. These risks contribute previously hidden human and economic costs to the impacts of severe hurricanes.

Funded by the School of Global Environmental Sustainability at Colorado State University, a group of social scientists at the university analyzed long-term health statistics regarding women and infants who experienced Hurricane Andrew. The hurricane swept through Miami-Dade and Broward Counties in Florida in 1992 and the researchers carefully compared these data to those of other Florida counties with populations of more than 100,000, as well as locales along Hurricane Andrew’s path from southern Florida to northeast Mississippi.

The study is detailed in the article “Maternal Hurricane Exposure and Fetal Distress Risk” in the October issue of the journal Risk Analysis, published by the Society for Risk Analysis. The article was authored by Sammy Zahran of the Center for Disaster and Risk Analysis, Department of Sociology; Jeffrey Snodgrass, Department of Anthropology; Lori Peek, Center for Disaster and Risk Analysis, Department of Sociology; and Stephan Weiler, Department of Economics, all of Colorado State University.

According to the analysis, a mother’s exposure to the hurricane during her second trimester increased the odds of fetal distress at birth by 20 percent. Fetal distress risk increased 26 percent for third trimester exposed mothers. African-American mothers experienced even higher fetal distress rates with those exposed during their third trimester 45 percent more likely to give birth to a distressed infant than white unexposed mothers. The research carefully controls for a number of possible influences, including other known risk factors that can lead to fetal distress.

The authors found babies exposed to the hurricane during the first trimester of development showed no evidence of increased risk of distress. Fetal distress is defined as a “measurable deficiency in oxygen reaching fetal tissues” and can require long-term medical monitoring to
track intellectual and language development as infants grow into toddlers. The article notes recent research suggesting “prenatal exposure to natural disasters may negatively impact general intellectual and language development among toddlers and could result in increased risk of schizophrenia, among other deleterious outcomes.”

“We observe noticeable spikes in the proportion of infants born distressed for all racial groups that correspond with the onset of Hurricane Andrew,” said Professor Zahran. A number of biological pathways relating to the ability to withstand maternal stress levels may work alone or in tandem to create the condition, according to the researchers. The authors highlight the many dislocations and mental health strains high impact hurricanes like Andrew create for those affected, and note Miami-Dade and Broward counties in Florida were the hardest hit by Hurricane Andrew, the costliest Atlantic hurricane prior to Hurricane Katrina in 2005. The authors also urge the economic impacts of additional health care to address fetal distress be factored into evaluations of hurricane costs, noting it is comparable in terms of medical costs to maternal diabetes and other serious health conditions. Pregnant women's unique stressors and the need for prenatal care should be more carefully addressed in preparations by emergency planners, according to the authors. They suggest that women considering motherhood be made aware of the increased risk of remaining in hurricane prone areas during their pregnancies and that evacuations of areas under imminent threat of hurricanes prioritize expectant mothers to minimize additional risks to fetuses. “When designing disaster planning initiatives, emergency managers should include representatives from groups and agencies that focus on women’s reproductive health. . . Relief centers should be organized to ensure that they meet women’s needs for prenatal care,” according to the article.

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