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Short running head: Exposure to the WTC Event and Birth Outcomes

Key words: World Trade Center, newborns, birth weight, birth length, head circumference, gestational duration, geographic information systems

Outline of Manuscript Section Headers

- I. Abstract
- II. Introduction
- III. Methods
 - a. Recruitment sites
 - b. Sample selection
 - c. Data collection
 - d. Geographical data
 - e. Statistical analyses
- IV. Results
 - a. Description of the sample
 - b. Classification of women by time and place
 - c. Birth outcomes
- V. Discussion
- VI. Tables
- VII. Figures

Abstract

The effects of prenatal exposure to the World Trade Center (WTC) disaster on fetal growth and subsequent health and development of exposed children remain a source of concern. We assessed the impact of gestational timing of the disaster and distance from the WTC in the four weeks after 9-11 on the birth outcomes of 300 non-smoking women who were pregnant at the time of the event. They were recruited at delivery between December 2001 and June 2002 from three hospitals close to the WTC site. Residential and work addresses of all participants for each of the four weeks following 9-11-01 were geocoded for classification by place and timing of exposure. Average daily hours spent at each location were based the women's reports for each week. Biomedical pregnancy and delivery data extracted from the medical records of each mother and newborn included medical complications, type of delivery, length of gestation, birth weight, birth length, and head circumference. Term infants born to women who were pregnant on 9-11-01 and who were living within a two-mile radius of the WTC during the month following the event showed significant decrements in term birth weight (-149 g) and birth length (-0.82 cm), compared to infants born to the other pregnant women studied, after controlling for sociodemographic and biomedical risk factors. The decrements remained significant with adjustment for gestational duration (-122 g and -0.74 cm, respectively). Women in the first trimester of pregnancy at the time of the WTC event delivered infants with significantly shorter gestation (-3.6 days), and a smaller head circumference (-0.48 cm), compared to women at later stages of pregnancy, regardless of the distance of their residence or work sites from the WTC. The observed adverse effects suggest an impact of pollutants and/or stress related to the WTC disaster and have implications for the health and development of exposed children.