



# Disaster Exposure and Birth Outcomes: A Systematic Review

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## ABSTRACT

**Introduction:** The risk of natural and artificial disasters is continuously increasing due to urbanization, population growth, and climate change. Children and pregnant women, due to their unique conditions, are more susceptible to injury and more likely to experience complications during disasters. Research indicates that maternal exposure to disasters can have adverse effects on both the mother and the fetus, some of which may be irreversible. Therefore, this study aimed to evaluate the impact of maternal exposure to disasters on birth outcomes.

**Search Strategy:** This study was conducted using a systematic review method. Evidence published from 2000 to 2024 was analyzed by searching international databases (PubMed, Scopus, WOS, and Google Scholar) in English with the keywords "Disaster", "Crisis", "Maternal exposure", "Prenatal exposure", and "Birth outcome". In this study, search and data analysis process was based on the PRISMA guideline. From a total of 126 studies, 19 original studies were analyzed based on inclusion criteria such as exposure to natural disasters, free availability of full-text, and publication in English.

**Results:** Results showed a significant relationship between maternal exposure to disasters and birth outcomes. Being present in an affected area during pregnancy can have deleterious effects, including inadequate fetal development, low birth weight, preterm birth, high rates of cesarean, and a decreased immune response in infants. These adverse outcomes may be attributed to factors such as food insufficiency, poor housing conditions, limited access to healthcare facilities, and excessive stress during pregnancy, especially in developing countries. Additionally, the effects of exposure are most concentrated among infants born to women aged 15-24 years and those who experienced disasters during the first trimester. This issue suggests that exposure during the first trimester may be more strongly related to genetic disorders, while exposures later in pregnancy are likely linked to growth or labor complications.

**Conclusion and Discussion:** Disasters are associated with adverse birth outcomes. However, it is essential to assess the timing of exposure and the type and severity of the disasters. Improved prenatal care may mitigate the differences in birth conditions compared to those observed before exposure.

### Citation:

Fard Moghadam N, Vosoughi S, Alizadeh A. Disaster Exposure and Birth Outcomes: A Systematic Review. *Iranian biomedical journal* 2024; 28(7): 278.

**Keywords:** Disasters, Maternal exposure, Pregnant women

