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Maternal Heat Exposure and Birth Outcomes: Insights from Administrative Data in Wales

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Objectives

The aim of this study was to examine associations between maternal heat exposure during pregnancy and birth outcomes.

Methods

This cross-sectional, retrospective study linked administrative data on all births in Wales during 2022 to maternal heat exposure data. Data were accessed via the Secure Anonymised Information Linkage (SAIL) Databank. Maternal residential histories were anonymously linked to HADUK climate data to quantify trimester-specific heat exposure (days above the 90th percentile). Birth outcomes included gestational age, birth weight, stillbirth, neonatal mortality, Apgar scores, and mode of birth. Generalised linear regression models were employed to explore associations and to adjust for maternal age, ethnicity, and deprivation. This approach linked environmental and administrative data to generate insights into heat exposure effects on pregnant women.

Results

The analysis included all births in Wales during 2022 (n = 30,553), comprising 15,822 males (51.79%) and 14,731 females (48.21%). The mean gestational age at birth, the primary outcome, was 38.84 weeks (sd = 2.2). Mean birth weight at birth was 3329.4 grams (sd = 614.9). There were 130 stillbirths and 76 cases of neonatal mortality recorded. Exclusion criteria included multiple pregnancy and incomplete maternal address history during pregnancy. Ongoing analysis examines the association between maternal heat exposure during pregnancy and birth outcomes. Adjusting for factors such as maternal age, ethnicity and deprivation aids further understanding of the potential effects of heat exposure on various subgroups of pregnant mothers, which may result in greater health inequalities.

Conclusion

Pregnant women are vulnerable to the effects of climate change. This study explores the effects of heat exposure on pregnancy outcomes to guide future research. This work has the potential to contribute to evidence-based policymaking and underscores the value of linking environmental to administrative data in addressing global health challenges.

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