Stillbirth Risk During High Outdoor Temperatures in Canada

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1 Background

Risks factors for stillbirth are poorly understood, including the possible impact of high outdoor temperature.

Elevated temperatures may stress pregnant women, particularly at term, and be a risk factor for stillbirth.

2 Methods

Data 5,047 stillbirths and 1,370,779 live births in Quebec, Canada, April-September, 1981-2011

Exposure Maximum daily temperatures the estimated day before death, Environment Canada

Outcome Stillbirth by week of gestation (preterm, term), and cause (undetermined, maternal, placenta/cord/membranes, birth asphyxia, congenital anomaly, other)

Analysis Study design = Case-crossover
Conditional logistic regression to estimate odds ratios between temperature and stillbirth, adjusted for relative humidity

3 Results

Table 1 Risk of stillbirth with elevated temperature the day before death

<table>
<thead>
<tr>
<th>No. Stillbirths</th>
<th>Odds Ratio (95% CI)</th>
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<tbody>
<tr>
<td>(N=5,047)</td>
<td>30°C vs. 20°C</td>
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Gestational age
Term 1,693 1.22 (1.02-1.46)
Preterm 3,198 0.97 (0.85-1.11)

Cause of death
Undetermined 1,190 1.28 (1.02-1.59)
Maternal 248 1.72 (1.06-2.80)
Placenta, cord, membranes 1,671 0.93 (0.77-1.12)
Birth asphyxia 301 1.15 (0.75-1.77)
Congenital anomaly 697 0.97 (0.73-1.29)
Remaining causes 940 0.90 (0.70-1.15)

4 Conclusion

Elevated outdoor temperature may be a novel risk factor for stillbirth, especially at term, and for stillbirths due to maternal complications or undetermined causes.

5 Figure 1 Association between stillbirth and maximum temperature the day before death

Odds Ratio (95% Confidence Interval)

Temperature, °C