

Supplemental Material

Maternal exposure to ambient temperature and risk of preterm birth

in Chengdu, China, from 2017 to 2020: A Cohort Study

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TableS1. Adjusted relative risk of PTB associated with extreme ambient temperature by pregnancy window using extended Cox proportional hazard model.

Pregnancy windows	N	Model 1 ^a RR(95% CI)	Model 2 ^b RR(95% CI)	Model 3 ^c RR(95% CI)
Whole pregnancy ^d				
Mild	5488	ref.	ref.	ref.
Cold	680	1.30(0.74,2.28)	1.32(0.74,2.37)	4.61(1.89,11.25)
Hot	682	0.82(0.50,1.35)	0.79(0.48,1.31)	0.63(0.31,1.28)
the first 3 months of pregnancy				
Mild	5489	ref.	ref.	ref.
Cold	677	1.26(0.79,2.02)	1.34(0.84,2.13)	0.62(0.29,1.33)
Hot	684	1.03(0.54,1.97)	1.03(0.53,1.99)	1.21(0.44,3.31)
Weeks 1-7				
Mild	5488	ref.	ref.	ref.
Cold	679	0.97(0.63,1.50)	1.06(0.64,1.76)	1.26(0.53,3.03)
Hot	683	0.92(0.57,1.50)	0.95(0.58,1.54)	1.13(0.52,2.45)
Weeks 8-14				
Mild	5483	ref.	ref.	ref.
Cold	685	0.82(0.49,1.39)	0.83(0.48,1.44)	0.58(0.17,1.98)
Hot	682	1.02(0.66,1.57)	1.08(0.68,1.71)	1.06(0.53,2.11)
Weeks 15-21				
Mild	5485	ref.	ref.	ref.
Cold	682	0.58(0.27,1.25)	0.60(0.28,1.31)	0.38(0.11,1.33)
Hot	683	0.92(0.56,1.50)	1.01(0.61,1.68)	0.67(0.33,1.35)
Weeks 22-28				
Mild	5496	ref.	ref.	ref.
Cold	676	0.77(0.50,1.25)	0.73(0.44,1.22)	0.54(0.20,1.46)
Hot	678	0.75(0.49,1.16)	0.67(0.38,1.18)	0.24(0.11,0.54)
four weeks before delivery				
Mild	5491	ref.	ref.	ref.
Cold	680	1.32(0.79,2.24)	1.34(0.79,2.27)	2.37(1.08,5.22)
Hot	679	0.69(0.39,1.21)	0.65(0.36,1.15)	0.33(0.13,0.83)
one week before delivery				
Mild	5491	ref.	ref.	ref.
Cold	677	0.69(0.40,1.19)	0.69(0.40,1.19)	0.52(0.28,0.96)
Hot	682	0.93(0.54,1.61)	0.92(0.53,1.61)	0.98(0.49,1.95)

Abbreviations: RR: Relative risk ,CI: Confidence interval. ^a In model 1, unadjusted variables. ^b In model 2, adjusted for age, household registration, occupation, education background, annual family income, pre pregnancy BMI, season of conception, gravidity, parity, history of gestational diabetes mellitus, history of gestational hypertension, smoking, and alcohol drinking. ^c In model 3, adjusted for age, household registration, occupation, education background, annual family income, pre pregnancy BMI, season of conception, gravidity, parity, history of gestational diabetes mellitus, history of gestational hypertension, smoking, alcohol drinking and relative humidity, barometric pressure, precipitation, ground wind speed and direct radiation during pregnancy. ^d

Average value of air temperature from gestational week 1 to birth or the end of gestational week 36(whichever came first).

TableS2. Adjusted relative risk of PTB in each gestational week exposed to extreme cold and extreme heat during the whole pregnancy

Week of delivery	Delivered	n Ongoing pregnancies	RR(95%CI)	
			Cold	Hot
22	0	6850	0.90 (0.38,2.13)	1.81(0.75,4.36)
23	0	6850	1.52(0.65,3.55)	0.60(0.23,1.55)
24	0	6850	1.26(0.55,2.84)	1.54(0.57,4.18)
25	0	6850	1.27(0.62,2.57)	0.74(0.28,1.98)
26	0	6850	0.56(0.24,1.28)	1.34(0.55,3.29)
27	0	6850	1.01(0.46,2.22)	0.49(0.19,1.26)
28	0	6850	0.58(0.25,1.36)	0.59(0.23,1.51)
29	1	6849	0.93(0.42,2.07)	1.23(0.49,3.10)
30	8	6841	1.66(0.75,3.68)	1.15(0.46,2.84)
31	6	6835	1.22(0.54,2.76)	1.93(0.79,4.70)
32	4	6831	1.06(0.46,2.46)	0.54(0.22,1.34)
33	10	6821	1.29(0.59,2.80)	1.03(0.42,2.53)
34	27	6794	0.93(0.43,2.01)	1.03(0.39,2.70)
35	69	6725	0.68(0.32,1.44)	0.49(0.19,1.25)
36	178	6547	0.62(0.29,1.32)	0.84(0.34,2.03)

RR: Relative risk ,CI: Confidence interval. With reference at mild. Whole-pregnancy exposure of deliveries during each week was compared with whole-pregnancy exposure truncated up to that week for ongoing pregnancies. The model is adjusted according of adjustment variables in Table 2, Model 3

TableS3. Delivery models relative risk (RR) and 95 % confidence intervals (CI) to PTB for cold at different lag days with reference at 18 °C using different degrees of freedom.

Lag effects	degrees of freedom (4 df/year) for temporal adjustment	degrees of freedom (6 df/year) for temporal adjustment	degrees of freedom (7 df/year) for temporal adjustment	degrees of freedom (4 df) for meteorological variables	degrees of freedom (6 df) for meteorological variables	degrees of freedom (7 df) for meteorological variables
0	1.43(0.97,2.09)	1.43(0.96,2.13)	1.34(0.90,2.01)	1.37(0.93,2.04)	1.40(0.94,2.07)	1.38(0.94,2.05)
1	1.30(0.97,1.75)	1.30(0.96,1.77)	1.23(0.90,1.68)	1.26(0.93,1.70)	1.27(0.94,1.72)	1.26(0.93,1.71)
2	1.20(0.96,1.51)	1.21(0.95,1.53)	1.14(0.89,1.46)	1.17(0.92,1.48)	1.18(0.93,1.49)	1.17(0.93,1.48)
3	1.13(0.94,1.36)	1.13(0.94,1.37)	1.07(0.88,1.31)	1.10(0.91,1.33)	1.11(0.92,1.33)	1.10(0.91,1.33)
4	1.08(0.92,1.26)	1.08(0.91,1.27)	1.02(0.86,1.21)	1.05(0.89,1.23)	1.05(0.90,1.24)	1.05(0.89,1.23)
5	1.04(0.90,1.21)	1.04(0.89,1.22)	0.99(0.84,1.16)	1.01(0.87,1.18)	1.02(0.87,1.18)	1.01(0.87,1.18)
6	1.02(0.87,1.18)	1.01(0.87,1.19)	0.96(0.82,1.13)	0.99(0.85,1.15)	0.99(0.85,1.15)	0.99(0.85,1.15)
7	1.00(0.86,1.17)	1.00(0.85,1.17)	0.95(0.81,1.12)	0.98(0.84,1.14)	0.98(0.84,1.14)	0.97(0.84,1.13)
8	1.00(0.85,1.16)	0.99(0.85,1.16)	0.94(0.80,1.11)	0.97(0.83,1.13)	0.97(0.83,1.13)	0.97(0.83,1.13)
9	1.00(0.86,1.16)	1.00(0.85,1.16)	0.95(0.81,1.11)	0.97(0.84,1.13)	0.98(0.84,1.13)	0.97(0.84,1.13)
10	1.01(0.87,1.17)	1.01(0.87,1.17)	0.95(0.81,1.11)	0.98(0.85,1.14)	0.98(0.85,1.14)	0.98(0.85,1.14)
11	1.02(0.89,1.17)	1.02(0.88,1.18)	0.96(0.83,1.12)	1.00(0.87,1.15)	1.00(0.87,1.15)	1.00(0.87,1.14)
12	1.04(0.91,1.19)	1.04(0.91,1.19)	0.98(0.85,1.13)	1.01(0.89,1.16)	1.02(0.89,1.16)	1.02(0.89,1.16)
13	1.07(0.94,1.21)	1.06(0.94,1.21)	1.00(0.87,1.15)	1.04(0.92,1.17)	1.04(0.92,1.18)	1.04(0.92,1.17)
14	1.09(0.97,1.23)	1.09(0.96,1.23)	1.02(0.90,1.17)	1.06(0.94,1.19)	1.07(0.95,1.20)	1.06(0.95,1.20)
15	1.12(1.00,1.26)	1.12(0.99,1.26)	1.05(0.92,1.19)	1.09(0.97,1.22)	1.09(0.97,1.23)	1.09(0.97,1.23)
16	1.15(1.02,1.29)	1.14(1.01,1.30)	1.07(0.93,1.22)	1.11(0.99,1.25)	1.12(0.99,1.26)	1.12(0.99,1.26)
17	1.17(1.04,1.33)	1.17(1.02,1.33)	1.09(0.94,1.26)	1.14(1.00,1.29)	1.15(1.01,1.30)	1.15(1.01,1.30)
18	1.20(1.05,1.37)	1.19(1.04,1.37)	1.11(0.95,1.29)	1.16(1.01,1.32)	1.17(1.02,1.34)	1.17(1.02,1.34)
19	1.22(1.06,1.41)	1.21(1.04,1.40)	1.12(0.96,1.31)	1.18(1.02,1.36)	1.19(1.03,1.37)	1.19(1.03,1.37)
20	1.23(1.06,1.43)	1.22(1.05,1.43)	1.13(0.96,1.33)	1.19(1.02,1.38)	1.20(1.04,1.39)	1.20(1.04,1.39)
21	1.24(1.07,1.44)	1.23(1.05,1.44)	1.13(0.95,1.34)	1.19(1.02,1.39)	1.21(1.04,1.41)	1.21(1.04,1.41)
22	1.24(1.07,1.44)	1.22(1.04,1.43)	1.12(0.95,1.33)	1.19(1.02,1.39)	1.20(1.03,1.40)	1.21(1.04,1.40)
23	1.23(1.06,1.42)	1.21(1.03,1.41)	1.10(0.93,1.31)	1.18(1.01,1.37)	1.19(1.03,1.38)	1.19(1.03,1.39)
24	1.20(1.05,1.38)	1.18(1.02,1.37)	1.08(0.91,1.27)	1.15(1.00,1.33)	1.16(1.01,1.35)	1.17(1.01,1.35)
25	1.17(1.03,1.32)	1.14(0.99,1.32)	1.04(0.88,1.22)	1.12(0.97,1.29)	1.13(0.98,1.30)	1.13(0.99,1.31)
26	1.12(0.99,1.27)	1.09(0.94,1.27)	0.99(0.84,1.17)	1.07(0.92,1.24)	1.08(0.93,1.25)	1.09(0.94,1.26)
27	1.06(0.92,1.23)	1.03(0.86,1.22)	0.93(0.77,1.13)	1.01(0.85,1.20)	1.02(0.85,1.21)	1.03(0.86,1.22)
28	0.99(0.82,1.20)	0.95(0.76,1.19)	0.86(0.68,1.09)	0.94(0.75,1.18)	0.94(0.75,1.18)	0.96(0.76,1.20)
29	0.91(0.70,1.18)	0.87(0.65,1.17)	0.79(0.58,1.07)	0.86(0.64,1.16)	0.86(0.64,1.16)	0.88(0.65,1.18)
30	0.82(0.58,1.17)	0.78(0.53,1.15)	0.70(0.47,1.05)	0.78(0.53,1.15)	0.78(0.53,1.15)	0.79(0.53,1.17)

TableS4. Delivery models relative risk (RR) and 95 % confidence intervals (CI) to PTB for hot at different lag days with reference at 18 °C using different degrees of freedom.

Lag effects	degrees of freedom (4 df/year) for temporal adjustment	degrees of freedom (6 df/year) for temporal adjustment	degrees of freedom (7 df/year) for temporal adjustment	degrees of freedom (4 df) for meteorological variables	degrees of freedom (6 df) for meteorological variables	degrees of freedom (7 df) for meteorological variables
0	1.03(0.72,1.47)	1.04(0.72,1.49)	1.06(0.74,1.54)	1.00(0.70,1.44)	1.00(0.69,1.43)	1.01(0.70,1.44)
1	1.04(0.78,1.37)	1.04(0.78,1.39)	1.07(0.80,1.44)	1.01(0.76,1.34)	1.00(0.76,1.33)	1.01(0.77,1.34)
2	1.04(0.84,1.29)	1.05(0.84,1.31)	1.08(0.85,1.37)	1.02(0.82,1.27)	1.01(0.81,1.25)	1.02(0.82,1.26)
3	1.04(0.88,1.24)	1.05(0.87,1.26)	1.08(0.89,1.32)	1.02(0.86,1.22)	1.01(0.85,1.20)	1.02(0.86,1.21)
4	1.04(0.90,1.20)	1.05(0.90,1.23)	1.08(0.91,1.29)	1.02(0.88,1.18)	1.01(0.88,1.17)	1.02(0.88,1.18)
5	1.04(0.91,1.18)	1.04(0.90,1.21)	1.08(0.92,1.28)	1.02(0.89,1.17)	1.01(0.88,1.16)	1.02(0.89,1.17)
6	1.03(0.91,1.18)	1.04(0.90,1.20)	1.08(0.92,1.27)	1.02(0.89,1.16)	1.01(0.88,1.15)	1.02(0.89,1.16)
7	1.03(0.90,1.17)	1.03(0.89,1.20)	1.07(0.91,1.26)	1.01(0.89,1.16)	1.01(0.88,1.15)	1.01(0.88,1.16)
8	1.02(0.89,1.16)	1.03(0.89,1.19)	1.06(0.90,1.25)	1.01(0.88,1.16)	1.00(0.87,1.15)	1.01(0.88,1.15)
9	1.01(0.88,1.15)	1.02(0.88,1.18)	1.05(0.89,1.24)	1.00(0.87,1.15)	0.99(0.86,1.14)	1.00(0.87,1.14)
10	1.00(0.87,1.14)	1.01(0.87,1.16)	1.04(0.89,1.22)	0.99(0.87,1.14)	0.98(0.86,1.13)	0.99(0.86,1.13)
11	0.99(0.87,1.12)	1.00(0.87,1.15)	1.03(0.88,1.20)	0.98(0.86,1.12)	0.98(0.85,1.11)	0.98(0.86,1.12)
12	0.98(0.86,1.10)	0.99(0.86,1.13)	1.01(0.87,1.18)	0.97(0.86,1.10)	0.97(0.85,1.10)	0.97(0.85,1.10)
13	0.96(0.86,1.08)	0.97(0.85,1.11)	1.00(0.86,1.16)	0.96(0.85,1.08)	0.95(0.85,1.08)	0.96(0.85,1.08)
14	0.95(0.85,1.07)	0.96(0.85,1.09)	0.98(0.85,1.13)	0.95(0.84,1.07)	0.94(0.84,1.06)	0.95(0.84,1.07)
15	0.94(0.84,1.05)	0.95(0.84,1.08)	0.97(0.84,1.11)	0.94(0.83,1.05)	0.93(0.83,1.05)	0.94(0.83,1.05)
16	0.92(0.83,1.04)	0.94(0.83,1.07)	0.95(0.83,1.10)	0.93(0.82,1.04)	0.92(0.82,1.04)	0.93(0.82,1.04)
17	0.91(0.81,1.03)	0.93(0.81,1.06)	0.94(0.81,1.08)	0.91(0.81,1.03)	0.91(0.81,1.03)	0.91(0.81,1.03)
18	0.90(0.80,1.02)	0.92(0.80,1.05)	0.93(0.80,1.07)	0.90(0.80,1.02)	0.90(0.79,1.02)	0.90(0.80,1.02)
19	0.89(0.78,1.01)	0.91(0.79,1.04)	0.91(0.78,1.06)	0.89(0.78,1.02)	0.89(0.78,1.02)	0.89(0.78,1.02)
20	0.88(0.77,1.00)	0.90(0.77,1.04)	0.90(0.77,1.05)	0.88(0.77,1.01)	0.88(0.77,1.01)	0.88(0.77,1.01)
21	0.87(0.76,1.00)	0.89(0.76,1.03)	0.89(0.76,1.04)	0.87(0.76,1.01)	0.87(0.76,1.00)	0.87(0.76,1.00)
22	0.86(0.75,0.99)	0.88(0.76,1.02)	0.88(0.75,1.03)	0.86(0.75,1.00)	0.86(0.75,0.99)	0.86(0.75,0.99)
23	0.85(0.75,0.98)	0.87(0.75,1.01)	0.87(0.74,1.02)	0.86(0.74,0.99)	0.86(0.74,0.99)	0.86(0.74,0.98)
24	0.85(0.75,0.97)	0.87(0.75,1.01)	0.86(0.74,1.01)	0.85(0.74,0.98)	0.85(0.74,0.97)	0.85(0.74,0.97)
25	0.84(0.74,0.96)	0.86(0.75,1.00)	0.86(0.73,1.01)	0.84(0.74,0.97)	0.84(0.74,0.97)	0.84(0.73,0.96)
26	0.84(0.74,0.96)	0.86(0.74,1.00)	0.85(0.73,1.01)	0.84(0.73,0.97)	0.84(0.73,0.97)	0.84(0.73,0.96)
27	0.84(0.73,0.97)	0.86(0.73,1.02)	0.85(0.71,1.02)	0.84(0.72,0.98)	0.84(0.72,0.98)	0.83(0.71,0.97)
28	0.84(0.70,1.00)	0.86(0.71,1.05)	0.85(0.69,1.05)	0.84(0.69,1.01)	0.84(0.69,1.01)	0.83(0.69,1.00)
29	0.84(0.67,1.06)	0.87(0.68,1.11)	0.86(0.66,1.11)	0.84(0.66,1.07)	0.84(0.66,1.06)	0.83(0.65,1.05)
30	0.85(0.63,1.14)	0.87(0.64,1.19)	0.86(0.63,1.19)	0.84(0.62,1.15)	0.84(0.62,1.14)	0.83(0.61,1.13)

RR: Relative risk ,CI: Confidence interval. Clod(10th percentile): 7 °C; Median (50th percentile):18 °C; Hot(90th percentile):27 °C; The model is adjusted according of relative humidity, barometric pressure, precipitation, ground wind speed and direct radiation (during the corresponding day), long-term trend and seasonality, an indicator for day of week (DOW), an indicator for public holiday (PH).