

Supplementary Materials

Global associations between extreme temperature events and childhood cancer incidence and mortality

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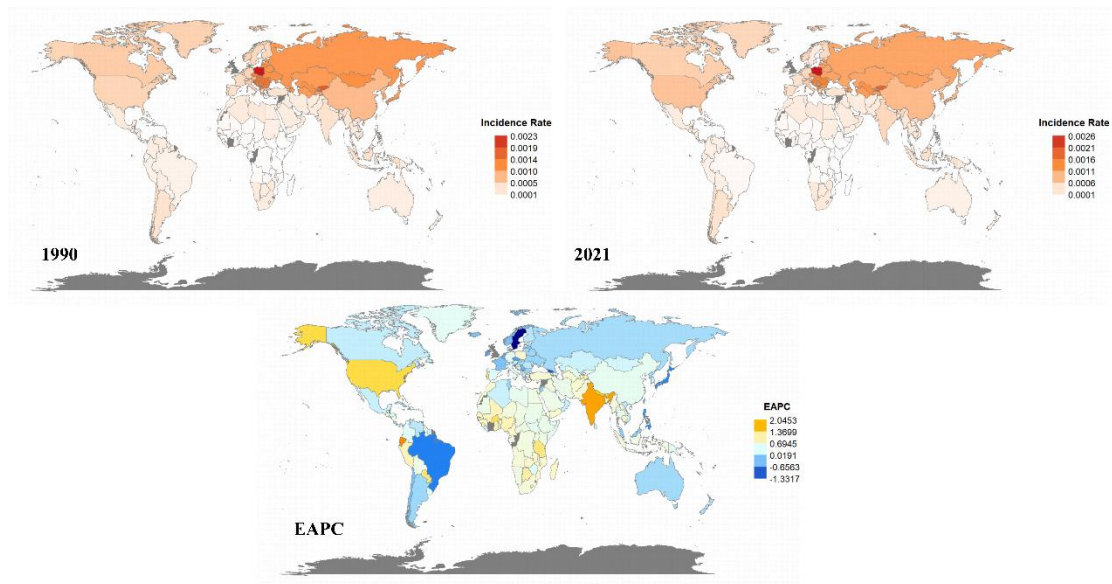
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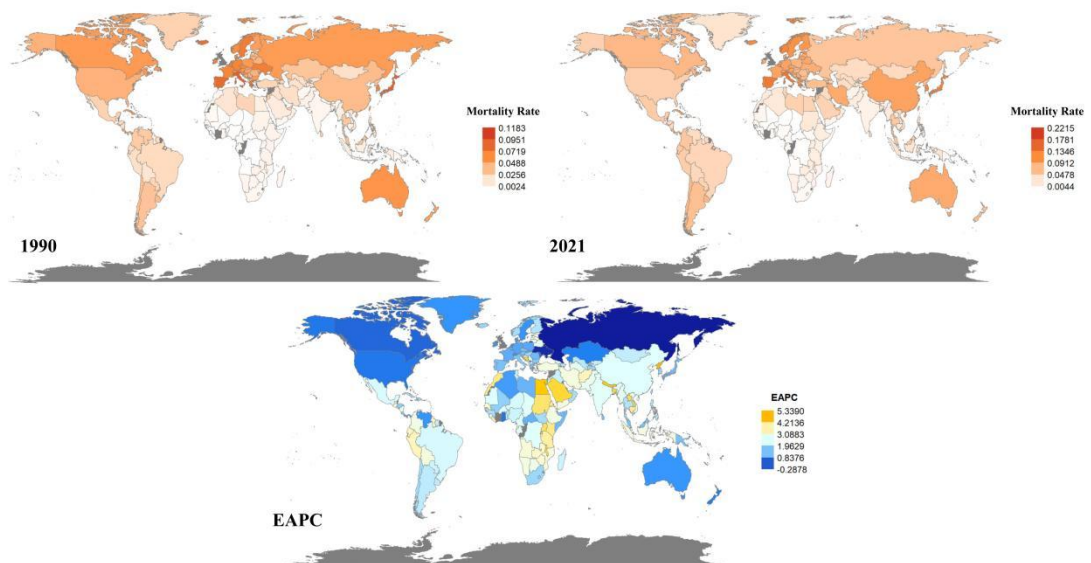
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Supplementary Figure 1. Global landscape of childhood cancer burden: epidemic trends in incidence rata, 1990–2021.



Supplementary Figure 2. Global landscape of childhood cancer burden: epidemic trends in mortality rata, 1990–2021.

Supplementary Table 1. Association between extreme temperatures and extreme temperature events on childhood cancer burden and the results of stratification analysis by population size.

	Incidence Rate		Mortality Rate	
	Estimate	<i>P-Value</i>	Estimate	<i>P-Value</i>
CCE				
<100 million inhabitants	0.582 (0.559, 0.605)	<0.001	4.887 (3.721, 6.052)	<0.001
100-300 million inhabitants	0.473 (0.386, 0.559)	<0.001	1.637 (-3.074, 6.348)	0.50
>300 million inhabitants	0.486 (0.336, 0.636)	<0.001	4.547 (2.605, 6.489)	<0.001
CHE				
<100 million inhabitants	0.705 (0.667, 0.743)	<0.001	9.452 (7.659, 11.246)	<0.001
100-300 million inhabitants	0.825 (0.713, 0.936)	<0.001	8.240 (1.516, 14.965)	0.02
>300 million inhabitants	0.679 (0.314, 1.046)	<0.001	8.391 (4.120, 12.663)	<0.001
Cold waves				
<100 million inhabitants	5.517 (4.778, 6.255)	<0.001	16.212 (13.019, 19.405)	<0.001
100-300 million inhabitants	2.510 (-0.876, 5.886)	0.15	24.867 (9.717, 40.0168)	0.001
>300 million inhabitants	4.395 (-0.369, 9.160)	0.07	57.495 (1.690, 113.306)	0.047
Heat waves				
<100 million inhabitants	6.908 (6.150, 7.667)	<0.001	20.400 (17.106, 29.394)	0.001
100-300 million inhabitants	1.858 (-1.699, 5.415)	0.31	9.901 (-6.291, 26.091)	0.23
>300 million inhabitants	11.420 (5.939, 16.900)	0.001	12.179 (5.592, 18.766)	0.001

Note: Due to the substantial variance in the magnitude of childhood cancer burden indicators, incidence and mortality rates are reported per 100,000 and per 10,000,000 population, respectively.

Supplementary Table 2. Association between extreme temperatures and extreme temperature events on childhood cancer burden and the results of stratification analysis by population SDI.

		Incidence Rate		Mortality Rate	
		Estimate	<i>P-Value</i>	Estimate	<i>P-Value</i>
CCE					
SDI	Low SDI	0.008 (0.004, 0.011)	<0.001	2.231 (1.544, 2.918)	<0.001
	Low-middle SDI	0.067 (0.058, 0.076)	<0.001	0.977 (-0.257, 2.210)	0.12
	Middle SDI	0.004 (-0.010, 0.011)	0.93	2.205 (0.767, 3.642)	0.002
	High-middle SDI	-0.011 (-0.031, 0.009)	0.28	0.798 (-0.913, 2.509)	0.36
	High SDI	-0.009 (-0.024, 0.006)	0.22	0.217 (-2.698, 3.133)	0.88
CHE					
SDI	Low SDI	0.007 (0.003, 0.011)	0.002	3.302 (2.445, 3.763)	<0.001
	Low-middle SDI	0.080 (0.064, 0.097)	<0.001	4.951 (2.707, 7.195)	<0.001
	Middle SDI	-0.021 (-0.038, -0.005)	0.01	4.402 (2.167, 6.688)	<0.001
	High-middle SDI	-0.021 (-0.058, 0.015)	0.36	0.669 (-2.426, 3.763)	0.67
	High SDI	-0.001 (-0.027, 0.024)	0.88	1.101 (-3.772, 5.975)	0.66
Cold waves					
SDI	Low SDI	0.078 (0.036, 0.120)	<0.001	26.242 (17.502, 34.981)	<0.001
	Low-middle SDI	0.774 (0.592, 0.956)	<0.001	32.571 (7.847, 57.2948)	<0.001
	Middle SDI	-0.239 (-0.462, -0.016)	0.04	48.510 (17.827, 79.193)	0.002
	High-middle SDI	-0.555 (-1.083, -0.026)	0.04	0.350 (-44.235, 44.936)	0.99
	High SDI	0.452 (0.009, 0.894)	0.045	-13.518 (-99.584, 72.549)	0.76
Heat waves					
SDI	Low SDI	0.067 (0.024, 0.110)	0.002	27.294 (18.389, 36.201)	<0.001
	Low-middle SDI	0.895 (0.722, 1.069)	<0.001	53.687 (29.898, 77.476)	<0.001
	Middle SDI	-0.249 (-0.487, -0.011)	<0.001	31.517 (-1.039, 64.073)	0.06
	High-middle SDI	-0.160 (-0.704, 0.384)	0.46	11.647 (-33.821, 57.115)	0.62
	High SDI	0.036 (-0.433, 0.505)	<0.88	85.067(-4.261, 174.394)	0.06

Note: Due to the substantial variance in the magnitude of childhood cancer burden indicators, incidence and mortality rates are reported per 100,000 and per 10,000,000 population, respectively.

Supplementary Table 3. Association between extreme temperatures and events on the burden of childhood cancer subtypes.

	Incidence Rate		Mortality Rate	
	Estimate	<i>P-Value</i>	Estimate	<i>P-Value</i>
CCE				
HB	-0.091 (-0.121, -0.062)	<0.001	-0.061 (-0.096, -0.026)	<0.001
MNBAC	0.003 (-0.036, 0.042)	0.87	0.107 (0.029, 0.186)	0.01
NBL	0.006 (-0.008, 0.021)	0.47	-0.046 (-0.104, 0.010)	0.11
NPC	-0.001 (-0.006, 0.003)	0.78	0.011 (0.001, 0.021)	0.04
RB	-0.004 (-0.027, 0.018)	0.85	-0.009 (-0.028, 0.010)	0.33
TC	0.010 (-0.001, 0.021)	0.25	0.004 (0.001, 0.007)	0.003
WT	0.001 (-0.006, 0.003)	0.28	0.045 (0.014, 0.076)	0.004
CHE				
HB	-0.065 (-0.113, -0.016)	0.03	-0.017 (-0.075, 0.040)	0.55
MNBAC	0.100 (0.036, 0.164)	0.009	0.305 (0.177, 0.434)	<0.001
NBL	0.006 (-0.018, 0.030)	0.67	-0.019 (-0.113, 0.075)	0.68
NPC	0.001 (-0.007, 0.009)	0.87	0.020 (0.003, 0.038)	0.02
RB	0.049 (0.012, 0.086)	0.04	0.049 (0.019, 0.080)	0.001
TC	-0.015 (-0.033, 0.003)	0.292	0.005 (-0.043, 0.054)	0.83
WT	0.016 (-0.021, 0.052)	0.44	0.083 (0.032, 0.134)	0.001
Cold waves				
HB	-1.030 (-1.620, 0.428)	0.01	-1.520 (-2.220, -0.826)	0.03
MNBAC	1.086 (0.299, 1.873)	0.018	1.721 (0.144, 3.298)	0.03
NBL	-0.067 (-0.363, 0.230)	0.70	-1.950 (-3.100, -0.802)	0.01
NPC	0.012 (-0.083, 0.106)	0.89	0.181 (-0.029, 0.391)	0.09
RB	0.335 (-0.116, 0.786)	0.21	0.626 (0.249, 1.002)	0.001
TC	0.115 (-0.107, 0.338)	0.45	-0.004 (-0.064, 0.055)	0.89
WT	0.335 (-0.116, 0.786)	0.17	-0.098 (-0.726, 0.530)	0.76
Heat waves				
HB	-1.140 (-1.750, 0.530)	0.01	-1.450 (-2.170, -0.737)	0.002
MNBAC	1.429 (0.624, 2.233)	0.004	2.554 (0.941, 4.167)	0.002
NBL	0.330 (0.026, 0.633)	0.04	-2.330 (-3.500, -1.160)	0.001
NPC	0.112 (0.016, 0.209)	0.03	0.220 (0.006, 0.435)	0.04
RB	0.083 (-0.379, 0.544)	0.74	0.543 (0.158, 0.928)	0.006
TC	0.009 (-0.218, 0.237)	0.95	-0.029 (-0.090, 0.032)	0.35
WT	-0.206 (-0.663, 0.252)	0.42	0.131 (-0.511, 0.773)	0.69

Note: Due to the substantial variance in the magnitude of childhood cancer burden indicators, incidence and mortality rates are reported per 100,000 and per 10,000,000 population, respectively.