

SUPPLEMENTARY MATERIAL

SUPPLEMENTARY TABLE S1. Sensitivity analysis under different variables.

Variable	df	CRR (95% CI)			
		Lag0	Lag0-7	Lag0-14	Lag0-21
Average pressure	4	1.031 (1.018, 1.043)*	1.155 (1.093, 1.220)*	1.178 (1.097, 1.265)*	1.272 (1.150, 1.406)*
	5	1.031 (1.018, 1.044)*	1.157 (1.095, 1.222)*	1.180 (1.099, 1.267)*	1.275 (1.153, 1.411)*
Relative humidity	3	1.031 (1.019, 1.044)*	1.158 (1.097, 1.223)*	1.181 (1.100, 1.269)*	1.278 (1.156, 1.413)*
	5	1.031 (1.019, 1.044)*	1.158 (1.097, 1.223)*	1.181 (1.100, 1.269)*	1.278 (1.156, 1.414)*
PM ₁₀	4	1.030 (1.018, 1.043)*	1.154 (1.093, 1.218)*	1.178 (1.096, 1.265)*	1.272 (1.150, 1.407)*
CO	5	1.033 (1.020, 1.046)*	1.167 (1.105, 1.233)*	1.187 (1.105, 1.275)*	1.265 (1.143, 1.401)*
PM ₁₀ +CO	4	1.032 (1.019, 1.044)*	1.162 (1.101, 1.227)*	1.183 (1.101, 1.271)*	1.258 (1.137, 1.393)*
Temperature	3	1.029 (1.013, 1.045)*	1.149 (1.072, 1.230)*	1.178 (1.086, 1.277)*	1.282 (1.147, 1.432)*
	4	1.029 (1.013, 1.045)*	1.149 (1.073, 1.231)*	1.178 (1.085, 1.278)*	1.282 (1.146, 1.433)*
	5	1.029 (1.013, 1.045)*	1.148 (1.072, 1.230)*	1.178 (1.086, 1.278)*	1.282 (1.147, 1.434)*

* $P < 0.05$.Abbreviations: df=degree of freedom; PM₁₀=inhalable particulate matter; CRR=cumulative relative risk.

SUPPLEMENTARY TABLE S2. Overview information of cold spells under different definitions during cold season in 2014 to 2018 in Ningbo city of China.

Definitions	Temperature threshold (°C)	Duration (days)	Cold spell episodes	Cold spell days	Non-cold spell days
A	≤P ₅ (3.9)	≥2	19	82	613
B	≤P ₅ (3.9)	≥3	10	51	644
C	≤P ₅ (3.9)	≥4	6	42	653
D	≤P ₁₀ (5.5)	≥2	24	163	532
E	≤P ₁₀ (5.5)	≥3	19	131	564
F	≤P ₁₀ (5.5)	≥4	14	112	583

Note: "A-F" refers to 6 different definitions of cold spells, which were defined as days when the daily mean temperature was at or below the P₁₀ (5.5°C) or P₅ (3.9°C) percentile for at least 2, 3, or 4 consecutive days during the study period.Abbreviations: P₅=the 5th percentile; P₁₀=the 10th percentile.

SUPPLEMENTARY TABLE S3. Cumulative lag effect of cold spells and population death under 6 different definitions.

Definitions	CRR (95% CI)			
	Lag0	Lag0-7	Lag0-14	Lag0-21
A	1.031 (1.018, 1.044)*	1.156 (1.095, 1.221)*	1.181 (1.099, 1.268)*	1.276 (1.153, 1.411)*
B	1.029 (1.014, 1.045)*	1.148 (1.075, 1.225)*	1.173 (1.074, 1.281)*	1.265 (1.110, 1.442)*
C	1.027 (1.012, 1.043)*	1.134 (1.062, 1.210)*	1.147 (1.050, 1.252)*	1.220 (1.068, 1.393)*
D	1.022 (1.013, 1.032)*	1.122 (1.076, 1.169)*	1.158 (1.098, 1.220)*	1.239 (1.151, 1.334)*
E	1.020 (1.011, 1.030)*	1.119 (1.072, 1.168)*	1.169 (1.104, 1.238)*	1.255 (1.156, 1.363)*
F	1.016 (1.007, 1.026)*	1.102 (1.056, 1.151)*	1.161 (1.093, 1.234)*	1.254 (1.147, 1.370)*

Note: "A-F" refers to 6 different definitions of cold spells, which were defined as days when the daily mean temperature was at or below the P₁₀ (5.5°C) or P₅ (3.9°C) percentile for at least 2, 3, or 4 consecutive days during the study period. and "*" was $P < 0.05$.Abbreviations: P₅=the 5th percentile; P₁₀=the 10th percentile; CRR=cumulative relative risk.