Supplemental Material

Suicide and Ambient Temperature: A Multi-Country Multi-City Study

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Table of Contents

Figure S1. Quasi-Akaike Information Criteria (AIC modified with overdispersion) between linear and nonlinear models using a quadratic B-spline with one to three internal knots for the temperature-suicide association (A) pooled across all locations, locations in western countries (Brazil, Canada, South Africa, Spain, Switzerland, UK, and US), and locations in eastern countries (Japan, South Korea, Philippines, Taiwan, and Vietnam), (B) pooled for each country, and (C) in capital cities/regions where the number of suicides was largest for each country. BR, Brazil; CA, Canada; JP, Japan; KR, South Korea; PH, the Philippines; SA, South Africa; SP, Spain; SW, Switzerland; TW, Taiwan; UK, the UK; US, the United States; VN, Vietnam.

Figure S2. Country-specific lag-response associations for maximum suicide temperature (MaxST) vs. minimum suicide temperature (MinST) over the extended lags of up to 6 days (with 95% confidence interval, shaded grey) using a conditional Poisson model adjusting for seasonality, long-term time trend, and the day-of-week. RR, relative risk.

Figure S3. Location-specific lag-cumulative temperature-suicide associations as the best linear unbiased prediction (BLUP) (with 95% CIs, shaded grey) and the corresponding temperature distributions. The temperature-suicide associations were estimated by using a conditional Poisson model adjusting for seasonality, long-term time trend, and the day of week. The blue and red vertical dotted lines indicate the minimum suicide temperature and maximum suicide temperature, respectively. CI, confidence interval; RR, relative risk.

Figure S4. Country-specific pooled lag-response associations for the maximum suicide temperature (MaxST) vs. the minimum suicide temperature (MinST) with the 95% confidence intervals (vertical bars) using a conditional Poisson model adjusting for seasonality, long-term time trend, and the day of week. RR, relative risk.

Figure S5. Distributions of the location-specific (A) minimum suicide temperature (ºC) (MinST) and (B) maximum suicide temperature (ºC) (MaxST) against summer average temperature (ºC) by country. Larger symbols indicate the country-specific median values of the MinST and MaxST against the average of the summer temperature by country. The summer temperature was defined as the average of daily ambient temperature during June to September in the countries in Northern Hemisphere and during December to March in the countries in Southern Hemisphere.

Figure S6. Country-specific and location-specific lag-cumulative temperature-suicide associations for maximum suicide temperature (MaxST) vs. minimum suicide temperature (MinST) using a conditional Poisson model adjusting for seasonality, long-term time trend, and the day of week. Larger symbols indicate the country-specific pooled estimates, and the location-specific estimates were derived from the first-stage modeling. The grey lines indicate the 95% confidence intervals. RR, relative risk.

Figure S7. Pooled lag-cumulative relative risks (RRs) with 95% CIs (vertical bars) by country in sensitivity analyses. The main model (Main) included a quadratic B-spline with three internal knots for the temperature-suicide association over the lag of 0–2 d. A linear distributed lag model (Linear) included the same lag of 0–2 d and estimated the RR between the 1st and the 99th percentiles of mean temperature. Different parameterizations for the temperature-suicide association were applied by including one internal knot at 50th percentile (1 knot), two internal knots at 33rd and 66th percentiles (2 knot), and a cubic B-spline at the same three internal knots (Cubic). The maximum lag was extended up to 6 d (Lag6). Additional covariates such as the averages of relative humidity (Humidity) and sunshine duration (Sunshine) over the current day and a day before, respectively, were adjusted in a subset of data. The temperature-suicide associations were estimated using a conditional Poisson model adjusting for seasonality, long-term time trend, and the day of week. CI, confidence intervals.

References