Table S1. Search strategies.

Database	Search Terms
Pubmed	Term 1: ("air pollution" or "air pollutant" or "air pollutants") AND ("cohort" or "case control" or "epidemiolog*") AND ("suicide") Term 2: ("air pollution" or "air pollutant" or "air pollutants" or "PM10" or "PM2.5" or "particulate") AND ("suicide") AND ("cohort" or "case control") Term 3: ("air pollution" or "air pollutant" or "air pollutants") AND ("observation*" or "epidemiolog*") AND ("suicide") Term 4: ("particulate") AND ("observation*" or "epidemiolog*") AND ("suicide") Term 5: ("air pollution" or "air pollutant" or "air pollutants") AND ("suicide") Term 6: ("air temperature" or "ambient temperature" or "temperature") AND ("cohort" or "case control" or "epidemiolog*" or "observation*") AND ("suicide*")
Scopus	Term 1: ("air pollution" or "air pollutant" or "air pollutants") AND ("cohort" or "case control" or "epidemiolog*") AND ("suicide") Term 2: ("air pollution" or "air pollutant" or "air pollutants" or "PM10" or "PM2.5" or "particulate") AND ("suicide") AND ("cohort" or "case control") Term 3: ("air pollution" or "air pollutant" or "air pollutants") AND ("observation*" or "epidemiolog*") AND ("suicide") Term 4: ("air temperature" or "ambient temperature" or "temperature" or "climate" or "weather") AND ("cohort" or "case control" or "epidemiolog*" or "observation*") AND TITLE-ABS-KEY("suicide*") AND (LIMIT-TO (DOCTYPE,"ar")) AND NOT INDEX (medline)
Web of Science	Term 1: ("air pollution" or "air pollutant" or "air pollutants") AND ("cohort" or "case control" or "epidemiolog*") AND ("suicide") Term 2: ("air pollution" or "air pollutant" or "air pollutants" or "PM10" or "PM2.5" or "particulate") AND ("suicide") AND ("cohort" or "case control") Term 3: ("air pollution" or "air pollutant" or "air pollutants") AND ("observation*" or "epidemiolog*") AND ("suicide") Term 4: ("particulate") AND ("observation*" or "epidemiolog*") AND ("suicide") Term 5: ("air pollution" or "air pollutant" or "air pollutants") AND ("suicide") Term 6: ALL=("air temperature" or "ambient temperature" or "temperature" or "weather") AND ALL=("cohort" or "case control" or "epidemiolog*" or "observation*") AND ALL=("suicid*")

Table S2. MOOSE Checklist.

No.	Recommendation	Reported on Page No
	Reporting of background should include	
1	Problem definition	2-4
2	Hypothesis statement	4
3	Description of study outcome(s)	4-5
4	Type of exposure or intervention used	4, Table 1
5	Type of study designs used	4, Table 1
6	Study population	4, Table 1
7	Qualifications of searchers (eg, librarians and investigators)	4
8	Search strategy, including time period included in the synthesis and key words	4
9	Effort to include all available studies, including contact with authors	4
10	Databases and registries searched	4
11	Search software used, name and version, including special features used (eg, explosion)	NA
12	Use of hand searching (eg, reference lists of obtained articles)	4
13	List of citations located and those excluded, including justification	4-5
14	Method of addressing articles published in languages other than English	NA
15	Method of handling abstracts and unpublished studies	4
16	Description of any contact with authors	NA

17	Description of relevance or appropriateness of studies assembled for assessing the hypothesis to be tested	5
18	Rationale for the selection and coding of data (eg, sound clinical principles or convenience)	5
19	Documentation of how data were classified and coded (eg, multiple raters, blinding and interrater reliability)	5
20	Assessment of confounding (eg, comparability of cases and controls in studies where appropriate)	5-6
21	Assessment of study quality, including blinding of quality assessors, stratification or regression on possible predictors of study results	5-6
22	Assessment of heterogeneity	5
23	Description of statistical methods (eg, complete description of fixed or random effects models, justification of whether the chosen models account for predictors of study results, dose-response models, or cumulative meta-analysis) in sufficient detail to be replicated	5
24	Provision of appropriate tables and graphics	NA
25	Graphic summarizing individual study estimates and overall estimate	6, 14, 15
26	Table giving descriptive information for each study included	7
27	Results of sensitivity testing (eg, subgroup analysis)	14, 16, 17
28	Indication of statistical uncertainty of findings	17, 18, 19

NA=not applicable.

Table S3. Qualitative risk summary for the included studies.

Exposure	Positive Associations but not Significant	Significantly Positive Associations	Negative Associations but not Significant
Temperature	Dixon, 2018 Fernandez-Nino, 2018 Hiltunen, 2012 Luan, 2019 Maes, 1994 Salib, 1997 Yazra, 2020	Bando, 2017 Basagana, 2011 Barker, 1994 Basu, 2018 Deisenhammer, 2003 Grjibovski, 2013 Hiltunen, 2014 Hu, 2020 Merrill, 2019 Kayipmaz, 2020 Kim, 2011 Kim, 2016 Kim, 2019 Kubo, 2021 Lee, 2020 Likhvar, 2011 Muller, 2011 Page, 2007 Santurtún, 2020 Schneider, 2020 Sim, 2020 Williams, 2016 Zerbini, 2018	Fountoulakis, 2016 Makris, 2021
PM$_{2.5}$	Kim, 2018 Nguyen, 2021	Bakian, 2015 Liu, 2019	Astudillo-Garcia, 2019 Fernandez-Nino, 2018
PM$_{10}$	Astudillo-Garcia, 2019 Casas, 2017 Kim, 2010 Kim, 2018 Li et al. 2018	Kim, 2015 Lee, 2018 Lin, 2016 Szyszkowicz, 2010	Fernandez-Nino, 2018 Ng, 2016
O$_3$	Casas, 2017 Lee, 2018 Yang, 2019b	Kim, 2015 Nguyen 2021 Yang, 2019a	Astudillo-Garcia, 2019 Fernandez-Nino, 2018
SO$_2$	Kim, 2015 Kim, 2018 Szyszkowicz, 2010	Lee, 2018 Lin, 2016	Astudillo-Garcia, 2019 Fernandez-Nino, 2018 Kim, 2015 NG, 2016
NO$_2$	Kim, 2015 Kim, 2018	Bakian, 2015 Lee, 2018 Lin, 2016 Szyszkowicz, 2010	Astudillo-Garcia, 2019 Fernandez-Nino, 2018 NG, 2016 Thilakaratne, 2020
CO	Fernandez-Nino, 2018 Kim, 2015	Lee, 2018 Szyszkowicz, 2010	Thilakaratne, 2020

Text S1. Sensitivity analysis for meta-regression analysis.

In sensitivity analysis, we applied meta-regression analysis for the Gross Domestic Product (GDP) per capita (currency US$) and the Purchasing Power Parity (PPP) per capita (US$) obtained from the World Bank [1]. As the World Bank's classification of countries by income level was based on GNI per capita and no particular cut-off references were found for income classifications of GDP per capita and PPP per capita, we used the mean values of these indexes among the study countries to classify higher- and lower-income groups in the meta-regression analysis. For example, the cut-off at $30025 was used to classify higher- and lower-income groups based on GDP per capita. The RRs of suicide associations with an interquartile range (IQR) increase in the exposure factors are shown in Table S5. Results based on GDP per capita were robust to the RRs based on classifications by GNI per capita. RR of suicide associated with temperature was lower in higher-income countries (RR = 0.92, 95% CI: 0.87, 0.98) than the RR in lower-income countries (RR = 1.20, 95% CI: 1.14, 1.26), which was significantly different (p-value = 0.005). Likewise, RR was lower in higher-income countries than lower-income countries based on PPP per capita. For air pollutants, RRs tended to be higher in higher-income countries but the risk differences were not significant. In summary, income level was a significant effect modifier for the suicide-temperature associations, whereas it was not a significant effect modifier for the suicide risks associated with short-term exposure to air pollutants.

References

1. The World Bank GNI per capita, Atlas method (current US$) Available online: https://data.worldbank.org/indicator/NY.GNP.PCAP.CD (accessed on Apr 1, 2021).