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|  | **Supplementary: Systematic review search strategy** |  |
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|  | **GREENfile (EBSCO)** |  |
| # | Searches | Results |
| 1 | ( temperature OR ( climate AND change ) OR hot OR cold OR heat OR ( extreme AND weather ) OR heatwave OR meteorological ) AND ( pollution OR ( air AND pollution ) OR ( air AND quality ) OR ( particulate AND matter ) OR pm OR pm2.5 OR pm10 OR CO OR NO2 OR SO2 OR O3 OR ( Carbon AND monoxide) OR ( Nitrogen AND dioxide ) OR ( Sulphur AND dioxide ) OR Ozone ) AND ( ( mental AND health ) OR mental OR ( psychiatric AND health ) OR psychiatric OR dementia OR delirium OR psychoactive OR (substance AND use) OR schizophrenia OR schizotypal OR delusional OR schizoaffective OR psychotic OR (mood AND disorder) OR bipolar OR depressive OR depression OR anxiety OR stress OR dissociative OR somatoform OR neurotic OR eating OR sleep OR (sexual AND dysfunction) OR (personality AND disorders) OR (gender AND identity) OR (mental AND retardation) OR developmental OR behavioural OR emotional ) Publication Date: 20000101-20241031 | 389 |
| 2 | English, 2000-2025. All Fields |  |
|  |  |  |
|  |  |  |
|  | **Web of Science** |  |
| # | Searches | Results |
| 1 | temperature OR climate change OR hot weather OR cold weather OR heat OR heatwave OR extreme weather (Topic) and air pollution OR air quality OR particulate matter OR pm OR pm2.5 OR pm10 OR carbon monoxide OR CO OR nitrogen dioxide OR nitrogen dioxide OR NO2 OR ozone OR O3 OR sulphur dioxide OR SO2 (Topic) and mental health OR mental disorder OR psychiatric health OR dementia OR delirium OR substance use OR schizophrenia OR schizoaffective disorder OR delusional disorder OR mood disorder OR bipolar disorder OR depression OR anxiety OR stress disorder OR dissociative disorder OR somatoform disorder OR neurotic disorder OR eating disorder OR sleep disorder OR sexual dysfunction OR personality disorder OR gender identity disorder OR mental retardation OR developmental disorder OR behavioural disorder OR emotional disorder (Title) | 353 |
| 2 | *Timespan: 2000-01-01 to 2024-10-31 (Index Date)* |  |
|  |  |  |
|  |  |  |
|  | **MEDLINE** |  |
| # | Searches | Results |
| 1 | ((temperature[Title/Abstract] OR climate change[Title/Abstract] OR hot weather[Title/Abstract] OR cold weather[Title/Abstract] OR heat[Title/Abstract] OR heatwave[Title/Abstract] OR extreme weather[Title/Abstract]) AND (air pollution[Title/Abstract] OR air quality[Title/Abstract] OR particulate matter[Title/Abstract] OR pm[Title/Abstract] OR pm2.5[Title/Abstract] OR pm10[Title/Abstract] OR carbon monoxide[Title/Abstract] OR CO[Title/Abstract] OR nitrogen dioxide[Title/Abstract] OR nitrogen dioxide[Title/Abstract] OR NO2[Title/Abstract] OR ozone[Title/Abstract] OR O3[Title/Abstract] OR sulphur dioxide[Title/Abstract] OR SO2[Title/Abstract])) AND (mental health[Title/Abstract] OR mental disorder[Title/Abstract] OR psychiatric health[Title/Abstract] OR dementia[Title/Abstract] OR delirium[Title/Abstract] OR substance use[Title/Abstract] OR schizophrenia[Title/Abstract] OR schizoaffective disorder[Title/Abstract] OR delusional disorder[Title/Abstract] OR mood disorder[Title/Abstract] OR bipolar disorder[Title/Abstract] OR depression[Title/Abstract] OR anxiety[Title/Abstract] OR stress disorder[Title/Abstract] OR dissociative disorder[Title/Abstract] OR somatoform disorder[Title/Abstract] OR neurotic disorder[Title/Abstract] OR eating disorder[Title/Abstract] OR sleep disorder[Title/Abstract] OR sexual dysfunction[Title/Abstract] OR personality disorder[Title/Abstract] OR gender identity disorder[Title/Abstract] OR mental retardation[Title/Abstract] OR developmental disorder[Title/Abstract] OR behavioural disorder[Title/Abstract] OR emotional disorder[Title/Abstract]) Filters: from 2000/1/1 - 2024/10/31 | 549 |
| 2 | Filters: from 2000/1/1 - 2024/10/31 |  |
|  |  |  |
|  |  |  |
|  | **Scopus** |  |
| # | Searches | Results |
| 1 | ( TITLE ( temperature OR ( climate AND change ) OR hot OR cold OR heat OR ( extreme AND weather ) OR heatwave OR meteorologica ) AND TITLE ( pollution OR ( air AND pollution ) OR ( air AND quality ) OR ( particulate AND matter ) OR pm OR pm2.5 OR pm10 OR co OR no2 OR so2 OR o3 OR ( carbon AND monoxide ) OR ( nitrogen AND dioxide ) OR ( sulphur AND dioxide ) OR ozone ) AND TITLE ( ( mental AND health ) OR mental OR ( psychiatric AND health ) OR psychiatric OR dementia OR delirium OR psychoactive OR ( substance AND use ) OR schizophrenia OR schizotypal OR delusional OR schizoaffective OR psychotic OR ( mood AND disorder ) OR bipolar OR depressive OR depression OR anxiety OR stress OR dissociative OR somatoform OR neurotic OR eating OR sleep OR ( sexual AND dysfunction ) OR ( personality AND disorders ) OR ( gender AND identity ) OR ( mental AND retardation ) OR developmental OR behavioural OR emotional ) ) AND PUBYEAR > 1999 AND PUBYEAR < 2025 | 282 |
| 2 | 2000-2024, title |  |
|  |  |  |
|  |  |  |
|  | **PsycINFO (Ovid)/Embase** |  |
| # | Searches | Results |
| 1 | (temperature or (climate and change) or hot or cold or heat or (extreme and weather) or heatwave or meteorological).ti. and (pollution or (air and pollution) or (air and quality) or (particulate and matter) or pm or pm2 5 or pm10 or CO or NO2 or SO2 or O3 or (Carbon and monoxide) or (Nitrogen and dioxide) or (Sulphur and dioxide) or Ozone).mp. and ((mental and health) or mental or (psychiatric and health)).ti. and (psychiatric or dementia or delirium or psychoactive or substance or schizophrenia or schizotypal or delusional or schizoaffective or psychotic or (mood and disorder) or bipolar or depressive or depression or anxiety or stress or dissociative or somatoform or neurotic or eating or sleep or (sexual and dysfunction) or (personality and disorders) or (gender and identity) or (mental and retardation) or developmental or behavioural or emotional).af. | 120 |
| 2 | 2000-2025. All fields |  |
|  |  |  |

**Systematic review eligibility criteria**

The inclusion and exclusion criteria were developed based on PECOS framework denoting the Population, Exposure, Comparator, Outcome and Study designs of interest, as below.

***Inclusion criteria:***

* Population worldwide.
* A primary study that investigates the effect of short-term (defined as
* an exposure length of ≥7 days) exposure to ambient (outdoor) air pollution or extreme temperatures.
* The association between the preceding exposure to air pollutant/ extreme temperature and the subsequent health outcome is reported quantitatively. This is reported as incidence (or life-time prevalence acceptable only in previously healthy/disease-free individuals at baseline in cross-sectional studies), as well as risk estimates, which may include odds ratio (OR), hazard ratio (HR) or relative risk (RR). The comparison is between those who were exposed to higher level or air pollution as compared to those exposed to less air pollution, or those exposed to extreme hot temepratures defined as those exceeding the 90th or 95th percentile of historical temperature distributions, and low extreme temperatures are defined as those below the 5th or 10th percentileas
* The study design is either case-control, cohort, cross-sectional, or ecological. Cross sectional studies must have a design adequate to answer the research question ‘is there an association between exposure to air pollution/ extreme temperature and subsequent risk of the selected health outcome reported as incidence or life-time prevalence in healthy/disease-free individuals at baseline?
* The primary study is peer reviewed and published in a journal.

***Exclusion criteria:***

* The population studied is not humans, or the study is in vitro or in vivo.
* The health outcome was ascertained by self-diagnosis (i.e., with no
* clinician input).
* The study is a long-term study (e.g., case-crossover studies, time-
* series studies) or another study design (e.g., case report), including
* all non-epidemiological study designs.
* The study does not report a quantitative risk estimate for the association
* between air pollution and the incidence of the disease. Risk
* estimates may include OR, HR, and RR.
* The study reports on markers or prognosis markers of the health outcomes of interest exclusively (and not the health outcome specifically, as a clinical diagnosis or assessment).
* The study is a literature review, systematic reviews, or meta-analyses. Pooled analyses of multiple cohorts will be included and dealt with as specified in the “Meta-analysis” section.
* The study is a conference abstract, thesis, preprint, or not peer reviewed/grey literature.