**Supplement**

Table S1.Inclusion/Exclusion criteria

Table S2. Search Strategy

Table S3. Example of data extraction

**Table S1. Inclusion/Exclusion criteria for systematic review of hydrological disaster exposure and mental health outcomes with a comparison group.**

|  |  |  |
| --- | --- | --- |
| Type of criterion | Category | Description |
| Inclusion | Population | People who experienced a hurricane or flooding in the US. Exposure defined as a hurricane, rainstorm, flooding, or other water-based natural disaster occurring within the United States |
|  | Intervention | None |
|  | Comparator | Clearly defined comparator (either pre & post measures on the same individuals or an unexposed control group) |
|  | Outcome | Mental health outcomes (psychological distress, anxiety, depression, posttraumatic stress symptoms) |
|  | Study design | Longitudinal, case-control, cross-sectional, panel study |
| Exclusion | Population | People who experienced a hurricane or flooding outside the US; any flooding that is the direct result of man-made disaster, studies focused on specific populations defined by occupation such as first responders, any studies only involving children younger than 10 years of age |
|  | Intervention | Any intervention studies |
|  | Comparator | Lack of a clearly defined unexposed population (temporal or geographical)  Use of different measures to assess mental health outcomes in each group or not administer among each group  Any retrospective recall of mental health before exposure used as pre-exposure or control |
|  | Outcome | Only substance abuse, post traumatic growth or positive mental health outcomes |
|  | Study design | Randomized controlled trial, qualitative study, editorial, review, case reports |

**Table S2. Search Strategy**

All searches performed 08/2021, refreshed 3/2023

PubMed via NLM Search

|  |  |
| --- | --- |
| Search | Query |
| 1 | ("Suicidal Ideation"[Mesh] OR "Suicide"[Mesh] OR “Mental disorders” [Mesh] OR “Anxiety Disorders” [Mesh] OR “Mood Disorders” [Mesh] OR suicid\*[tiab] OR "Self-Injurious Behavior"[Mesh] OR "self harm\*"[tiab] or "self-harm\*"[tiab] OR "self injur\*"[tiab] OR "self-injur\*"[tiab] OR “self mutilat\*”[tiab] OR “self-mutilat\*”[tiab]) |
| 2 | (hurricane\*[tiab] OR typhoon\*[tiab] OR cyclone\*[tiab] OR "tropical storm\*"[tiab] OR "natural disaster\*"[tiab] OR “flood\*”[tiab]) |
| 3 | #1 AND #2 |
| 4 | Filter out non-English language |

Embase via Elsevier Search

|  |  |
| --- | --- |
| Search | Query |
| 1 | 'suicidal ideation':ti,ab,kw OR 'mh suicide+':ti,ab,kw OR 'mh mental disorders+':ti,ab,kw OR 'ti suicid\*':ti,ab,kw OR 'ab suicid\*':ti,ab,kw OR 'mh self-injurious behavior+':ti,ab,kw OR 'ti self harm\*':ti,ab,kw OR 'ab self harm\*':ti,ab,kw OR 'ti self-harm\*':ti,ab,kw OR 'ab self-harm\*':ti,ab,kw OR 'ti self injur\*':ti,ab,kw OR 'ab self injur\*':ti,ab,kw OR 'ti self-injur\*':ti,ab,kw OR 'ab self-injur\*':ti,ab,kw OR 'ti self mutilat\*':ti,ab,kw OR 'ab self mutilat\*':ti,ab,kw OR 'ti self-mutilat\*':ti,ab,kw OR 'ab self-mutilat\*':ti,ab,kw |
| 2 | 'natural disaster'/exp OR 'natural disaster' OR hurricane:ti,ab,kw OR cyclone:ti,ab,kw OR 'tropical storm':ti,ab,kw OR flood\*:ti,ab,kw |
| 3 | #1 and #2 |

Scopus

|  |  |
| --- | --- |
| Search | Query |
| 1 | suicide OR mental AND disorders OR anxiety OR depression OR suicid\* OR "self harm" OR "self injur\*" OR "self mutilat\*" |
| 2 | natural AND disaster OR hurricane OR typhoon OR cyclone OR flood\* OR tropical AND storm |
| 3 | #1 and #2 |

Psych Info – via EBSCOhost

|  |  |
| --- | --- |
| Search | Query |
| 1 | (serious mental illness or mental health or mental disorder or anxiety or depression) OR suicide OR suicid\* OR "self-harm" OR "self injur\*" or "self mutilat\*" |
| 2 | natural disasters or hurricane or cyclone or typhoon or flood\* |
| 3 | #1 and #2 |

CinaHL Plus with full text- EBSCO host

|  |  |
| --- | --- |
| Search | Query |
| 1 | (((MH "Suicidal Ideation"+) OR (MH Suicide+) OR (MH "Mental disorders"+) OR (TI suicid\* OR AB suicid\*) OR (MH "Self-Injurious Behavior"+) OR (TI "self harm\*" OR AB "self harm\*") OR (TI self-harm\* OR AB self-harm\*) OR (TI "self injur\*" OR AB "self injur\*") OR (TI self-injur\* OR AB self-injur\*) OR (TI "self mutilat\*" OR AB "self mutilat\*") OR (TI self-mutilat\* OR AB self-mutilat\*)) |
| 2 | ((TI hurricane\* OR AB hurricane\*) OR (TI typhoon\* OR AB typhoon\*) OR (TI cyclone\* OR AB cyclone\*) OR (TI "tropical storm\*" OR AB "tropical storm\*") OR (TI "natural disaster\*" OR AB "natural disaster\*") OR (TI flood\* OR AB flood\*))) |
| 3 | #1 and #2 |

**Table S3. Example of data extraction template.**

|  |  |
| --- | --- |
| **Variable** | **Sample entry** |
| Disaster | Hurricane Katrina |
| Disaster year | 2005 |
| Number of study participants | 131 |
| Study design | Case-control |
| Analysis method | Means, linear regression |
| Definition of comparison group | Pre-disaster assessment |
| Did the design include pre and post assessment of the same individuals? | No |
| Publication year | 2007 |
| Sample description including if the sample was from a named study (such as the Opening Doors Study) | Participants were recruited from a relocation camp n=165 with ages ranging from 5-80. This study restricted to ages 11-22. |
| Time point of pre-disaster assessment | N/A |
| Time point of post-disaster assessment | 2 months |
| Definition of control group | Controls were recruited in residential neighborhoods from Columbia, MO and Jefferson City, MO. No control participants had experienced the hurricane first-hand, nor had they been recently relocated from the hurricane affected region |
| If controls were utilized in design, was matching used? | Yes |
| What variables were used to match controls to cases | Age, race, and SES |
| Number of time points of data collection | 1 |
| Dates of data collection (not relative to the disaster) | October 2005-November 2005 |
| Mean age of the sample | 15.2 years |
| Percent of the sample that was female | N=48 (36.6%) |
| Racial/ethnic composition of study sample | 93% African American |
| Disaster exposure definition or quantification | Living in a relocation camp, “FEMA city” for Hurricane Katrina survivors |
| Description of the exposure | N/A |
| Covariates included in the study | Family income, history of government assistance, sex, age |
| Each instrument used to measure depression/anxiety/PTSD/other mental health outcome | CES-D |
| Mean depression/anxiety/PTSD/other mental health outcome score in the exposed and unexposed (or pre-post)  Standard deviations for each mean | Controls, n=63, M=43.1 (9.6); Katrina sample, n=68, M= 47.1 (10.8) |
| Number and percent of the exposed that met criteria for depression/anxiety/PTSD/other mental health outcome | N/A |
| Number and percent of the unexposed that met criteria for depression/anxiety/PTSD/other mental health outcome | N/A |
| Was suicidal behavior or suicide assessed? | No |
| If so, then the behavior or mortality reported |  |
| Assessment among the unexposed or pre-disaster sample |  |
| Assessment among the exposed or post-disaster sample |  |
| Was substance use or abuse assessed? | No |
| If so, then the substance that was assessed |  |
| The use among the unexposed or pre-disaster sample |  |
| Use among the exposed or post-disaster sample |  |
| Risk factors identified in the manuscript for negative mental health outcomes | Males were more likely to report anxiety |
| Notes | Missing values were replaced with sample means. Number of missing is not reported. |