Assessing the Health Impact of Disasters: the **Disasters Health Burden** project using **Disability Adjusted Life Years**

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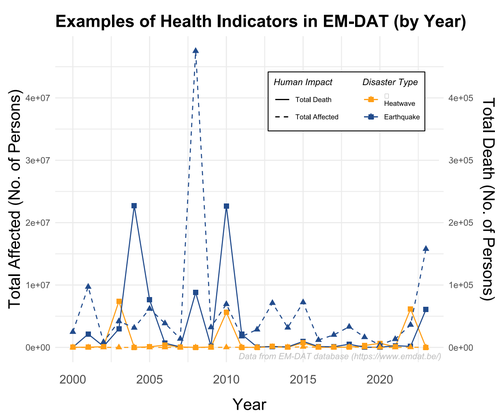
BACKGROUND

Disaster human impacts are not analyzed through any framework other than merely monitoring deaths and the number of affected individuals.



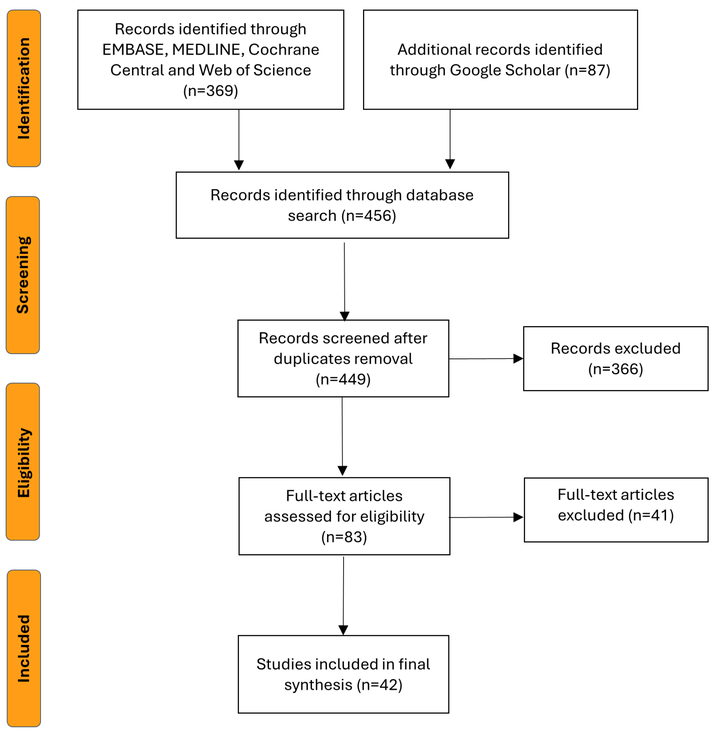
The EM-DAT International Disaster Database, the only global source accessible, mainly tracks the direct impacts of disasters. It does not consider indirect deaths and illnesses, reports human impacts only at the country level without specifics on gender or age, and does not include detailed data on causes of death or morbidity(1).

AIMS

- To comprehensively review existing studies quantifying Disability-Adjusted Life Years (DALYs) due to disasters.
- To critically discuss the methodological challenges of the Disasters Health Burden (DHB) project.

METHODS

We conducted a comprehensive search in EMBASE, MEDLINE, Cochrane Central, Web of Science, and Google Scholar from inception until 26.02.2024. The task involved identifying studies that estimated the disease burden resulting from 302 natural hazards, with an emphasis on those providing quantification in terms of Years of Life Lost (YLL), Years Lived with Disability (YLD), or DALY. No language, geographical location, and time restrictions were applied.

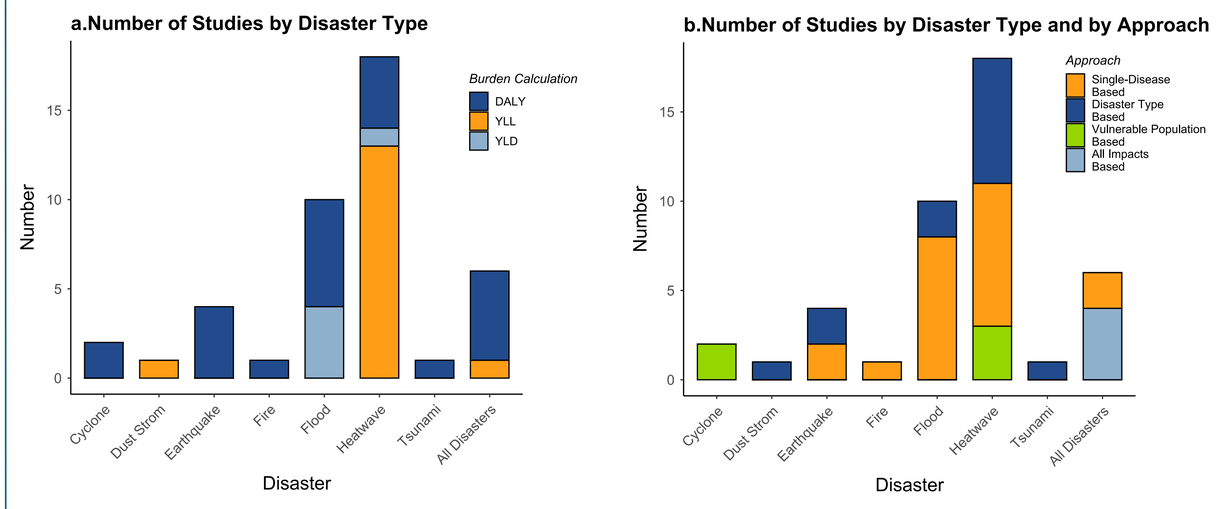


RESULTS

We retrieved a total of 456 articles. After removing duplicates, we screened a total of 449 studies. We performed full-text screening for 83 studies and extracted data from 42 studies.

- Most studies are conducted in China (n=19, 45%).
- The majority of studies calculated **DALYs** (n=23, 55%), while 14 (33%) calculated **YLL** only.
- The most common disaster type studied was **heatwaves** (n=18, 43%).
- Half of the studies (n=21) have employed **DALYs**, **YLL**, or **YLD** according to a **single-disease approach** to assess the hazard responsible for its onset.

Four studies calculated **DALYs** for all disasters. Three of these used data from the Global Burden of Disease study. One study developed a protocol to calculate DALYs by associating a "welfare reduction weight" with the number of people affected by a disaster, as recorded in the EM-DAT International Disaster Database(2).



Existing studies on **earthquakes**, **floods**, and **heatwaves** addressed methodological challenges estimating DALYs:

YLL

- Obtaining gender- and age-specific data
- No harmonisation of the definition of heatwaves
- Relate daily temperatures and excess mortality

YLD

- Date of health condition onset
- No data available on health condition deterioration
- Managing comorbidity
- Attributable burden of disease (risk factor)

CONCLUSIONS

- **DALYs** have not commonly been used to quantify the health impact of disasters.
- Establishing a standardized method to quantify **DALYs** resulting from disasters may be needed.
- Quantifying the **Disasters Health Burden** requires an adapted methodology for each disaster type.

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