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Exploring the impact of disasters on tourists' health and wellbeing: A systematic review protocol

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Abstract

Background

Disasters, whether anthropogenic or natural, are burdensome on global travel and tourism safety. We examine the effects of natural and climate-related disasters on tourists' health outcomes, which is crucial for public health and policy development, especially because of the increased frequency of natural disasters, global tourism, and travel.

Objectives

Our systematic review seeks to analyse the impact of natural disasters on tourists' health and wellbeing. Secondary to the primary aim, this review also aims to i) identify best practices and policy recommendations for disasters. ii) provide discussion points for travel health practitioners to have with their patients, and iii) develop a model to enhance tourists' resilience to disasters.

Methods

A combination of the following search terms and MeSH will be used and modified to suit each database's requirements: ill-health, disorder, morbidity, disease, tourist, traveller and natural disaster. The online databases to be searched are CINAHL, Embase, Medline, Scopus, Web of Science, and the first 1000 citations of Google Scholar. The findings will be downloaded into an EndNote library and screened using Rayyan for eligibility. Studies will be included in our review if they addressed disasters, tourism, health and wellbeing. The Quality Appraisal for Diverse Studies (QuADS) tool will be used to assess the quality of studies included, and the findings will be aggregated and narrated.

Results

Our systematic review will provide an evidence-based understanding of the health outcomes of tourists exposed to natural disasters. The findings will be useful for policymakers, researchers, and public health practitioners designing interventions to enhance travel and tourism safety.

Attachments



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Guidelines

The review will follow the Preferred Reported Items for Systematic Review and Meta-analyses (PRISMA) guidelines

Materials

N/A

Safety warnings

 N/A

Ethics statement

This study will not involve human subjects and is exempt from ethical approval. However, ethical principles in research synthesis will be upheld, including transparency and accurate reporting.

Main body

1 Background

Disasters are a public health threat and can be broadly categorised as anthropogenic or natural, depending on their underlying causes. Anthropogenic disasters are caused by human acts such as terrorism, war, industrial accidents, or systemic failure of man-made systems. Natural disasters result from natural hazards such as extreme climate events and violent internal earth movements (Metych, 2025). Natural disasters, especially sudden onset disasters like geophysical and climatologically induced disasters, are increasingly becoming more common, intense and with devastating impacts (Botzen et al., 2019; Thomas, 2017). Literature suggests that there is a significant increase in disaster occurrences and intensity between 2010 and 2020, causing massive losses and exacerbating ill health among the affected population (Cvetković et al., 2024). Disasters often disrupt life with devastating negative effects on health and wellbeing, the environment and economic activities. Our systematic review aims to examine the impacts of natural and climate-related disasters on tourists. Examining the impacts of natural and climate disasters on tourists' health and well-being is important in travel-related policy formation, especially because of the increased frequency and intensity of disasters globally and increasing volumes of tourists. Natural disasters pose a substantial threat to health and wellbeing, property, infrastructure, and the environment, and are omnipresent (Homeland Security, 2014). We define a natural disaster as a catastrophic natural phenomenon that causes significant harm to human life, ecosystems, and socio-economic systems (United Nations Office for Disaster Risk Reduction, 2015). This systematic review does not address anthropogenic disasters.

We define a tourist as an individual or a group of people who depart from their homes to other areas for personal, leisure, business or other reasons with the intent to return home (UNWTO, 2008) and are spending at least one night away from home.

2 Aim of the review and its public health significance

This systematic review seeks to analyse the impact of natural disasters on tourists' health and wellbeing.

Secondary to the primary aim, this review also aims to i) identify best practices and policy recommendations for disasters. ii) provide discussion points for travel health practitioners to have with their patients, and (iii) develop a model to enhance tourists' resilience to disasters.

3 The review questions

The following review questions will guide our study: i) How do natural disasters impact tourists' health and wellbeing? ii) What can be done to enhance tourists' resilience to disasters? iii) What are the recommendations for ensuring the safety and wellbeing of tourists around disasters?

Methods

4 Studies targeted, inclusion, and exclusion criteria

Our review will adhere to the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines (Page et al., 2021). A diverse body of peer-reviewed literature, on disasters, tourism and health will be included. The following criteria will be used for inclusion:

Table 1: Inclusion and exclusion criteria

Inclusion Criteria	Exclusion Criteria
Peer-reviewed articles	Gray literature
Articles published between January 2000 and February 2025	Articles published before January 1st 2000
Articles written in English and their full texts are available and accessible	Articles published in languages other than English
Articles addressing disasters, tourists' health and wellbeing	Articles that did not address disasters, tourists health and wellbeing
Articles with primary data	All articles without primary data
Full articles	Abstracts without detailed text
	Theoretical and or advanced modelling articles

A search log will be kept for accountability and transparency. The reference lists of the articles included will be reviewed for relevant literature that meets the inclusion criteria. Efforts will be undertaken to contact authors identified in the reference lists of studies to acquire their work that may be referred to but is unavailable online or in hard copy.

We intend to use the year 2000 as a benchmark to keep the information current. In addition, the year marked a critical turning point in travel with the birth of social media, which accelerated information sharing. For example, this is when the travel review site, i.e. TripAdvisor, was launched, followed by Meta's Facebook social

network, which catalysed the sharing of travel-related information among travellers (Lapidus, 2025; Xiang & Gretzel, 2010).

5 **P= The study population of interest**

All international tourists i.e. business travellers, backpackers, international truck drivers, short holidaymakers, safari and excursionists, safari-goers, cultural tourists, pilgrims, sports tourists and trophy or game hunters who leave their home countries to spend not less than one night away.

6 **E = Exposure**

Tourists exposed to natural disasters (i.e. geophysical, hydrological, meteorological, climatological, and biological) will be included.

7 **C = Comparator**

Tourists who have experienced disaster vs local population.

8 **O = Outcomes of interest**

The cardinal outcomes of interest include health and wellbeing indicators and their linkages.

9 **Search strategy and databases to be searched**

Appropriate search terms, subject heading truncations (*), and Boolean operators will be adjusted to meet the specifications for the following databases that will be searched: CINHALL, Cochrane Library, Embase, Medline, PubMed, Scopus, Web of Science, and the first 1000 citations of Google Scholar. We will also search the World Health Organisation (WHO) database. The following search string was developed and tested in Scopus on 25 February 2025:

Illness OR "Ill-health" OR "Ill health" OR Disorder OR Injury OR Morbidity OR Sickness OR Ailment OR Disease AND Tourist OR Traveller* OR Traveler* OR Backpacker* OR Vacation* OR Visitor* OR Adventure* OR Holiday* AND Disaster OR "Natural disaster" OR "Extreme weather" OR Wildfire* OR Brushfire* OR Bushfire* OR Flood* OR Heatwave OR Hurricane OR Cyclone OR Typhoon OR Blizzard* OR Avalanche* OR Land-slide* OR Landslide* OR Mud-slide* OR Mudslide* OR Drought OR Earthquake OR Tsunami OR "Volcanic eruption"*

Search results will be imported into EndNote for deduplication.

10 **Study selection**

Following deduplication, the search results will be uploaded into the Rayyan online platform (<https://www.rayyan.ai/>) to determine the eligibility of each study for inclusion. Within Rayyan, blinded title and abstract screening will be undertaken by at least two reviewers. Papers that do not meet the eligibility criteria will be removed. Papers marked as 'maybe' or flagged as a conflict will go on to full text review. Papers considered to meet the eligibility criteria will also go onto a full-text review. The full

text will be reviewed by at least two reviewers, with conflicts moderated and decided on by a third reviewer.

11 **Data Extraction**

An extraction form will be developed in Microsoft Excel. This form will be based on the Cochrane Public Health Group manual (The Cochrane Public Health Group, 2011) and Joanna Briggs Institute forms (Joanna Briggs Institute, 2011). The extracted data will include the study's country, publication year, objective, design, setting, sampling and data collection methods, relevant theory or hypothesis, type of disaster and travel-related outcomes, thematic area, key findings and conclusions, and policy or intervention recommendations and a section for comments.

12 **Quality and risk of bias assessment**

The methodological quality assessment of included studies will be conducted independently by two reviewers. The two reviewers will carefully examine the strengths and weaknesses of each document. The QuADS tool, which has strong inter-rater reliability, content and face validity, will be applied to the assessment of the quality of mixed methods studies (Harrison et al., 2021). QUADS will enable the assessment of theoretical or conceptual framework, research objectives, research context, target population, study design, sampling methods, and rationale for choosing data collection tools. Additionally, reviewers will assess the clarity of the data collection process, how well the data analysis addressed the research objectives, stakeholder involvement, and a critical discussion of the study's strengths and limitations (Dahl et al., 2024; Harrison et al., 2021). Each study's quality score will be determined by dividing the score of all the QuADS items with the highest possible score to provide a useful means for comparing the methodological and reporting quality across the studies included in the review (Dahl et al., 2024; Harrison et al., 2021). Studies will be scored independently by one reviewer, and 50% will be independently scored by a second reviewer. Any discrepancies will be discussed and resolved, and where differences remain unresolved, a third reviewer, a third reviewer will adjudicate.

13 **Data analysis**

Due to the nature of our review, we anticipate finding literature that is heterogeneous and diverse in methods, measurements, and outcomes, which will impede a statistical aggregation of the data and if this is the case, a narrative synthesis will be conducted, using tables to present ratings and frequencies (Cyril et al., 2013; Mokkink et al., 2010). However, should we encounter a sufficient pool of statistical data, a meta-analysis will be undertaken. Key patterns and themes will be identified, extracted from the included studies and analysed to provide insights into the health outcomes of tourists exposed to disasters. All included studies' results will be aggregated to enable comprehensive analysis. Nonetheless, conclusions will be extracted from studies with high-quality ratings. One author will undertake the analysis and extract



the emerging themes, while another will assess the content's significance and verify the consistency in the identified themes.

14 **Results**

Our systematic review will provide an evidence-based understanding of the health and wellbeing outcomes of tourists caught up in natural disasters. The findings will be useful for policymakers, researchers, and public health practitioners in designing interventions to enhance travel safety and tourists' resilience to natural disasters.

15 **Funding and conflict of interest**

No external funding is sought or will be received for this study. The authors declare no conflict of interest.

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