A lightning flash talk: 
4 studies on climate change in 12 minutes

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Objectives

- Discuss four papers which looked at the impact of climate change on human health
- Articles will be briefly overviewed
- Goal is to have not only information but a story to tell
1. Impact of Wildfires on Emergency Departments

Published: 2022
Who: several southern and western US states (n=16), Australia (n=3)
When: 1991-2018
What: indicates particulate matter (PM) is principally linked to adverse respiratory and cardiovascular outcomes. Observable trends in the literature principally included a significant increase in respiratory presentations, primarily with a lag of one to two days from the initial event. Respiratory and cardiovascular studies that stratified results by age indicated individuals under five, over 65, or those with pre-existing conditions formed the majority of ED presentations.


Takeaway: A greater prevalence of women and children were observed in EDs following a wildfire event and a lag time was sometimes observed between the start of the event and significant increases in ED presentations. The primary presenting complaint secondary to wildfires at EDs across all studies was respiratory, and often this was from individuals with little or no previous history of the disease. Conversely, those more aware of their medical condition (predominantly chronic respiratory conditions) were able to self-medicate and adequately prepare for the event, assuming key messaging was promulgated in a timely manner.

1. Impact of Wildfires on Emergency Departments

2. Particulate Air Pollution and Incident of Dementia in the US

Published: 2023

Who: 27,857 US participants (mean [SD] age, 61 [10] years; 15,747 [56.5%] female) of the Health and Retirement Study

How: Compared the 10-year mean total PM$_{2.5}$ and PM$_{2.5}$ from 9 emission sources at participant residences

2. Particulate Air Pollution and Incident of Dementia in the US

What: Higher concentrations of total PM$_{2.5}$ were associated with greater rates of incident dementia (HR, 1.08; 95% CI, 1.01-1.17)
- strongest associations for agriculture, traffic, coal combustion, and wildfires (HR, 1.05; 95% CI, 1.02-1.08)
- wildfires release other components that are likely to be highly toxic
- Long-range smoke from wildfires frequently impacts the same downwind locations, resulting in wildfire smoke becoming a more long-term presence


https://kffhealthnews.org/news/stalked-by-the-fear-that-dementia-is-stalking-you/
3. Social and ecological determinants of mental health for children and youth

Published: 2021

Who: perspectives from Canadian children (0–14) and youth (15–24)

How: Literature review with thematic analysis of 58 articles

- What are the direct and indirect impacts of climate change on children/youth’s mental health in Canada?
- What are children/youth’s perceptions or views of climate change and how do they impact their mental health and wellbeing?
- In what ways can taking action on climate change through community projects strengthen and build resilience?


Takeaway:

- children/youth are currently experiencing considerable mental health issues for their age group, and are “feeling less in control of their lives than at any point in recent history”
- Furthermore, a majority of youth ages 10- to 12-years old experience feelings of fear, helplessness, worry, sadness, anger, and anxiety due to climate change
- children/youth are increasingly engaging in risk reduction, community climate adaptation, and mitigation initiatives, and policy discussions

3. Social and ecological determinants of mental health for children and youth

"Greta Thunberg Effect"


4. The impact of the COVID-19 lockdown on global air quality

Published: 2022

Who: worldwide (focuses on India, China, Brazil, and USA)

How: Literature review of reported pollution levels pre and during COVID-19

- studies included different cities, residential areas, commercial areas, tourist spots, industrial areas, mining sites, highways, and roads

4. The impact of the COVID-19 lockdown on global air quality

Takeaway:

- Global environmental pollution levels significantly improved, particularly the level of major air contaminants like NO$_2$, SO$_2$, CO, PM (PM$_{2.5}$ and PM$_{10}$)
- Environmental pollution decreased up to 30%
- Reduced major air contaminants prevented severe COVID-19 cases due to decreased lung and breathing complications


4. The impact of the COVID-19 lockdown on global air quality

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Take Home Points

- Climate disasters like wildfires, increasing in frequency due to changing climate, exacerbate current health problems and increase healthcare utilization
- Air pollutants, created by wildfires, may also increase the risk of long term illness such as dementia
- Climate disasters is causing psychological stress for children/youth who feel a lack of control and increased hopelessness for the planet
- With drastic changes, such as decreased transportation in COVID-19 lockdown, it’s not too late to make a difference