A Citizen-Science Study of Environmental Exposures and Asthma

Adapted from: A Citizen-Science Study Documents Environmental Exposures and Asthma Prevalence in Two Communities Conducted by **Samantha Eiffert** and colleagues including **Yomi Noibi, Melanie Pearson, and Andrea Winquist,** members of the HERCULES Exposome Research Center.

Introduction and Purpose

Residents in the English Avenue and Vine City areas of Atlanta, Georgia were concerned about flooding that had resulted in water entering homes and potentially leading to indoor mold and contributing to respiratory problems, especially asthma.

A **citizen-science** study was conducted documenting environmental exposures and the **prevalence** of asthma among those living in English Avenue and Vine City.

How the Study Was Done (Methods)

Research teams of public-health graduate students and local residents asked questions regarding conditions in the home and the respiratory health of an adult resident. The research teams looked for mold growth in the homes and collected a household dust sample. 153 residents participated.

Dust samples were analyzed for the 36 molds that make up the **Environmental Relative Moldiness Index (ERMI)**.

Results of Study

- 12% of homes reported a history of flooding.
- 14% of participants reported currently having asthma, compared to 8.4% of Georgians in a statewide survey.
- 35% of homes had visible mold in places other than the bathroom compared to 1.5% in a nationwide study.
- Homes with observed mold were **statistically significantly** more likely to have basements and reported water leaks.
- 83% of household dust samples had an **ERMI value** above 5, compared to only 25% in a nationwide study. Higher **ERMI values** were **statistically significantly** associated with asthma for those living in their current home for two years or less.

Limitations (Why we can't draw stronger conclusions)

The relationship between **ERMI values** and asthma in this study only existed for those living in their homes for two years or less. It is possible that people who have asthma, and then move into a home that worsens their asthma, move out within a few years. Therefore, participants who lived in a residence with mold for more than two years might be less sensitive to mold.

Because the date of the asthma diagnosis was not collected, we cannot tell if the diagnosis of asthma happened before or after the participants moved into their current homes. Finally, although the impact of flooding was the initial concern in the communities, many of the homes in the flood zones had been abandoned by the time of this study.

What does this mean?

While it is hard to draw strong conclusions from one study, the high percentage of homes with mold contamination and the high **prevalence** of asthma among residents in these communities should be a public health concern.

Key Words

Citizen-science: A collaboration between community members and professional scientists in which members of the community contribute to data collection and interpretation.

Prevalence: The percentage of people affected by a disease at a particular time.

Environmental Relative Moldiness Index (ERMI): A measure of mold due to water damage. Mold type is determined by the DNA measured from mold species in dust from the home. The ERMI value is the ratio of water-damage mold to common mold.

Statistically significantly: A statistical term that means there is enough evidence that the results obtained were not only due to chance.

Tips

To reduce the amount of mold in your home, moisture control is key:

- Improve airflow through your rooms (by using exhaust fans or opening windows and doors)
- Fix any water leaks
- Remove sources of dampness
- Make sure rainwater drains away from your house
- If possible, use central air conditioning with a HEPA filter attachment
- Go to the EPA's website for more information: https://www.epa.gov/mold/brief-guide-mold-moisture-and-your-home

Read the full article here: https://www.hindawi.com/journals/jeph/2016/1962901/

The study was funded by the HERCULES Exposome Research Center at Emory University.

HERCULES is funded by the National Institute of Environmental Health Sciences (P30ES019776) | Icons adapted from Arthur Shlain of the Noun Project