

Regional Environmental Associations of Hidradenitis Suppurativa

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Background

- **Hidradenitis suppurativa (HS)** is a chronic inflammatory skin disease with recurrent, painful nodules^{1,2}
- Smoking and obesity are established risk factors, but **environmental exposures are poorly characterized**³
- Studying environmental associations with HS in a Midwestern population (Omaha, NE) may uncover **region-specific environmental influences**

Objective

To evaluate associations between **environmental exposures** and **HS** related Emergency Department and Dermatology Clinic Visit Dates

Methods

Study period

- January 1, 2022 – December 31, 2023

Environmental data for Omaha, NE

- PM2.5, PM10, carbon monoxide (EPA)
- Temperature and humidity (Omaha Eppley Airport)

Clinical data

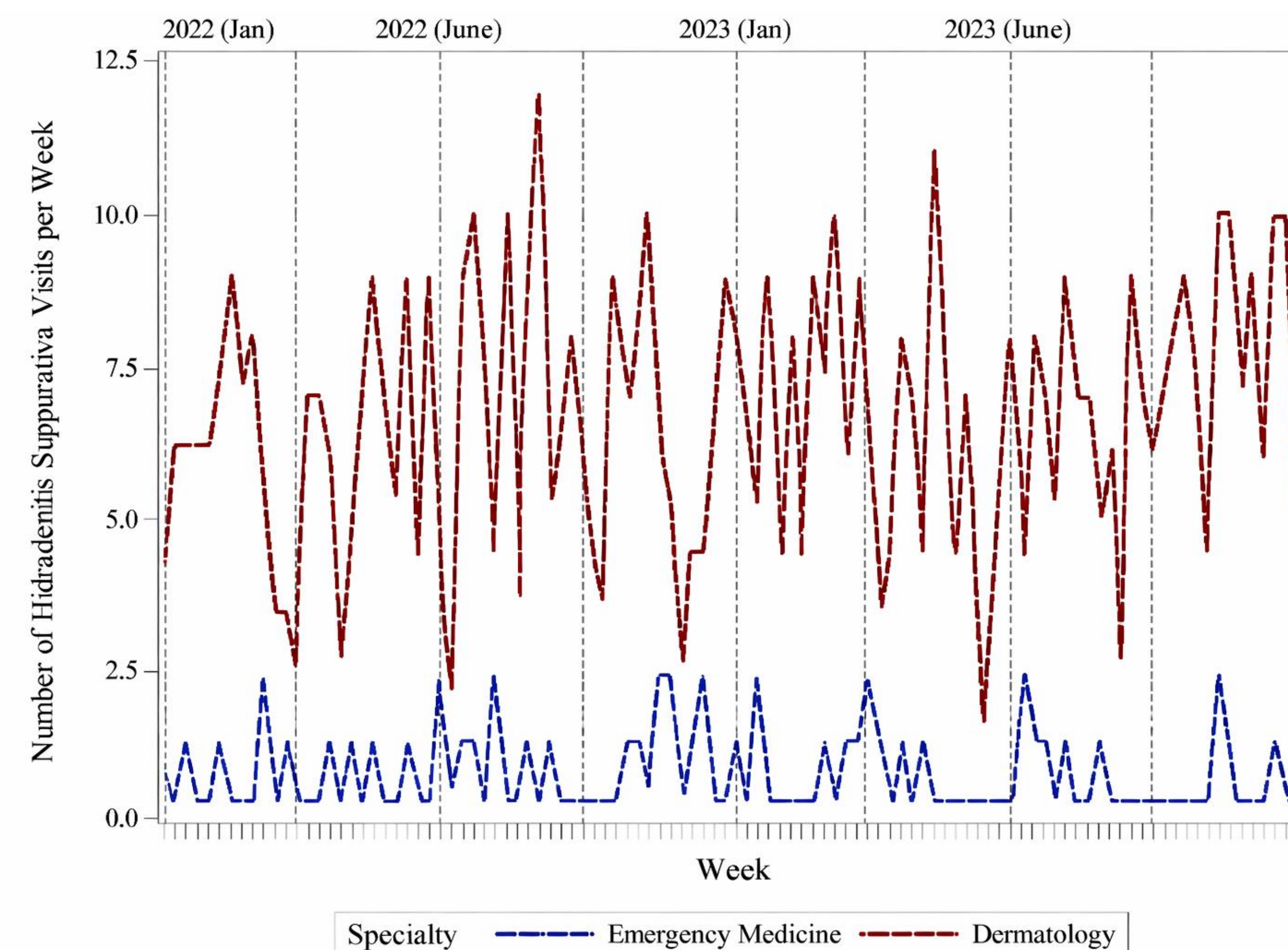
- Emergency Department (ED) and Dermatology Clinic Visit Dates with a primary diagnosis of HS identified at Nebraska Medicine

Analysis

- Optimal visit lag periods (0, 2, 4, 6 weeks) assessed from exposures using
 - Logistic regression (ED visits)
 - Poisson regression (dermatology visits)

Results

Number of HS Healthcare Visits Per Week at Nebraska Medicine (1/1/2022-12/31/2023)



48 ED (blue) and **667 dermatology clinic visits (red)** with a primary diagnosis of HS at Nebraska Medicine identified from 1/1/2022 – 12/31/2023

Emergency Department visits

- No environmental exposures were significantly associated in adjusted models

Dermatology Clinic Visits

- PM2.5 at lag 0 weeks associated with **fewer visits** (RR = 0.993, p = 0.02)
- PM10 at lag 2 weeks associated with **fewer visits** (RR = 0.992, p = 0.02)

Adjusted Odds Ratio for Environmental Variables with ED Visits for Hidradenitis Suppurativa

Weekly Environmental Measure	Adjusted Odds Ratio	P-value
Maximum Temperature (F)	0.980	0.15
Maximum Relative Humidity	1.088	0.11
Maximum PM 2.5 AQI, 6 week lag	0.976	0.16
Maximum PM 10 AQI, 2 week lag	0.989	0.52
Maximum CO AQI, 2 week lag	0.879	0.25
Week	0.991	0.28

Adjusted Relative Risk Ratios for Environmental Variables with Dermatology Clinic Visits for Hidradenitis Suppurativa

Weekly Environmental Measure	Adjusted Relative Risk Ratio	P-value
Maximum Temperature (F), 2 week lag	1.002	0.48
Maximum Relative Humidity, 6 week lag	1.011	0.22
Maximum PM 2.5 AQI	0.993	0.01
Maximum PM 10 AQI, 2 week lag	0.992	0.02
Maximum CO AQI, 2 week lag	1.034	0.08
Week	1.002	0.29

Discussion

Air pollution was hypothesized to increase HS flares but showed an **inverse association** with number of weekly clinic visits

Confounders and Limitations:

- **Appointment availability, scheduling in advance, and access-related confounders**
- Nebraska's moderate climate variability

Future Directions:

- **Alternative measures** of disease activity instead of visit dates such as **symptom tracking or treatment frequency tracking**
- Identifying past environmental extremes or disasters and tracking healthcare utilization following those extremes

References

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