



Impact of environmental exposures, social vulnerability, and pollution on psoriasis

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Background & Objectives

- Psoriasis is a chronic, immune-mediated disease with genetic, environmental, and socioeconomic factors contributing to its onset and development
- Our objective is to use a systematic literature review to explore the impact of environmental exposures, social vulnerability, and neighborhood characteristics on psoriasis
- Next, we aimed to use a geospatial analysis to understand how greater environmental risk and social vulnerability are associated with psoriasis severity and the risk of psoriatic arthritis (PsA)

Methods

- In accordance with PRISMA guidelines, we identified 36 original articles meeting our inclusion criteria and summarized our findings to highlight major themes and research gaps
- Next, we used residential addresses from the UCSF Psoriasis Registry to link clinical data of roughly 850 patients to the CDC Environmental Justice Index (EJI) and Social Vulnerability Index (SVI)
- The relevant indices and their subdomains were used as predictors of increased psoriasis severity and presence of PsA in adjusted regression analyses

Results

Systematic Review Results

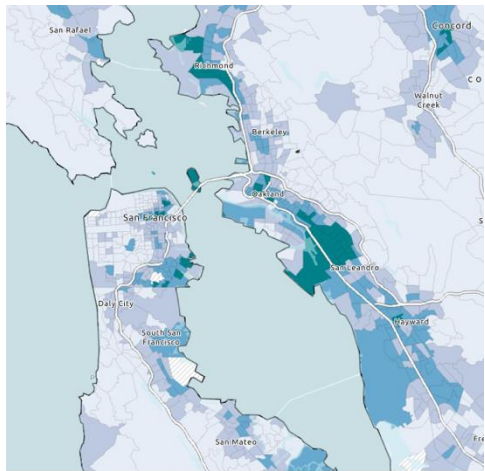
- Our literature review found air pollution exposure (e.g., PM2.5, PM10, ozone, and sulfates) to be associated with increased psoriasis incidence
- Exposure to green space increased disease incidence, while exposure to blue space was found to be protective, although further investigation is needed to elucidate this relationship.
- Socioeconomic factors and racial disparities also contributed to disease onset, as well as decreased access to biologic therapies among marginalized groups and lower SES individuals



- A summary of key findings from 22 of the 36 reviewed articles with discrete statistical findings can be viewed with the QR code

Geospatial Analysis Results

- Both higher SVI and EJI are associated with significantly increased risk of more severe Psoriasis and the presence of PsA
- Individual domains contributing to both associations included household composition & disability, minority status & language, and increased health vulnerability
- SES vulnerability was significantly associated with increased psoriasis severity, and air pollution burden was associated with increased risk of PsA



UCSF Psoriasis Database, EXACT Cohort

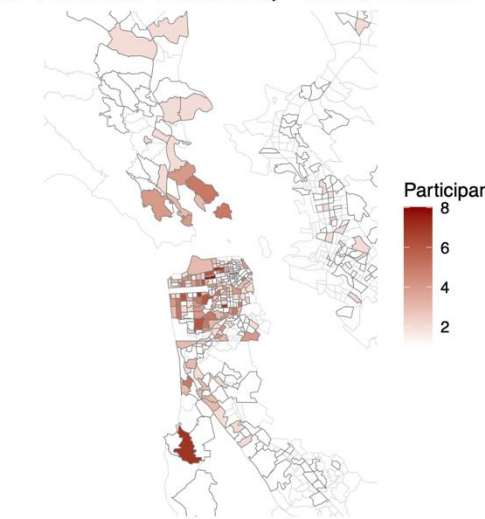


Table 1. Association between SVI, EJI and their sub-domains on Psoriasis severity and PsA				
Predictor Variable	Outcome	Odds Ratio	95% Confidence Interval	p-value
Social Vulnerability Index	Psoriasis Severity* (N=821)	2.31	(1.34, 3.97)	0.003
Socioeconomic vulnerability		2.85	(1.30, 6.26)	<0.001
Household Composition & Disability		2.07	(1.19, 3.61)	0.01
Minority Status & Language		1.7	(1.09, 2.64)	0.01
Environmental Justice Index	Psoriatic Arthritis Diagnosis** (N=836)	3.06	(1.65, 5.68)	0.0004
Health Vulnerability Index		3.18	(1.19, 8.51)	0.02
Social Vulnerability Index		2.21	(1.27, 3.85)	0.005
Household Composition & Disability		1.98	(1.12, 3.51)	0.02
Minority Status & Language		1.63	(1.04, 2.56)	0.03
Environmental Justice Index	Air pollution burden	2.32	(1.24, 4.35)	0.009
Air pollution burden		4.25	(1.45, 12.43)	0.008
Health Vulnerability Index		2.71	(1.03, 7.08)	0.04

*Evaluated by a dermatologist as Mild, Moderate, Severe or Very Severe

**Evaluated by Survey responses as No PsA, Possible PsA, or Definite PsA

Conclusion

- Data suggests that lifestyle factors, social vulnerability, and environmental risk contribute both to psoriasis onset as well as severity, and the presence of psoriatic arthritis
- Expanding this geospatial method to a larger cohort will help validate the model and contribute to the understanding of risk factors for increased psoriasis burden
- Further identification of modifiable risk factors has the potential to guide public health policies and disease management in high-risk communities

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