

Climate change and rural populations in dermatology: an intersection requiring further exploration

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The earth has increased in temperature by approximately 1.2 °C over 150 years, creeping close to the 1.5 °C threshold set by the UN Intergovernmental Panel on Climate Change. Beyond this, climate has irreversible effects on the hospitability of human life.¹ Variables such as temperature, humidity, ultraviolet radiation, and air pollution impact dermatologic health by modulating disease activity of several skin conditions, notably, skin cancers of which incidence is increasing dramatically.¹ The urban heat island effect is established in the literature, but there is a lack of climate-related research impacting rural populations.

With already rising skin cancer rates, rural populations may be at compounded risk. Populations working in agriculture balance economic stability and climate exposures, putting outdoor workers worldwide at increased risk.¹ Moreover, location impacts care access and prognosis. In Iowa, where over 1/3 of the population is rural, metastatic melanoma patients were more likely to be rural than those with nonmetastatic disease (OR = 1.13; $P < .01$; 95% CI [1.03–1.24]).² Rural populations had increased all-cause mortality (HR = 1.26; $P < .01$; 95% CI [1.19–1.34]).²

Rural populations face unique climate factors that increase skin cancer risk such as herbicides (ie, glyphosate), and fungicides (ie, mancozeb, maneb), which when combined with occupational sun exposure, are suggested to have a synergistic effect.³ Pooled analysis of case-control studies from Italy and Brazil demonstrated an association between any pesticide use and cutaneous melanoma (OR = 2.58; 95% CI [1.18–5.65]), with risk increasing even more with combined exposures (OR = 4.68; 95% CI [1.29–17.0]).³ Further work is needed to assess risks in the American landscape.

While agricultural work was traditionally performed by males, that picture is evolving. As the number of women in the agricultural workforce increases, there remains a paucity of literature exploring climate risks to women (often rural) specifically.⁴ Pesticides have been linked to endocrine disruption, possibly impacting reproductive health and breast cancer risk,⁴ but there is a gap in climate-related research in women. Additionally, women are often the members of the family advocating for the health of husbands, wives, grandparents, parents, children, and others. Women were 7.5× more likely to detect melanoma in their partners than their male counterparts.⁵ When thinking of women as advocates, it is important to recognize that gender does not exist as a binary. Increasing women's awareness of health-related climate changes allows for increased education of society, better health advocacy on an individual level, and perhaps more change on the policy level.

Dermatologists have a role in raising awareness and education on the cutaneous dangers of climate change. Specifically for skin disease, elevated global temperatures and possibly pesticides have positive associations with skin cancer, which may disproportionately affect rural communities. Thinking about the impact climate change has on the dermatologic health of rural communities may be best appreciated through the female lens in which we appreciate the ways they take on both traditional and new roles in the fields and in their families. More research is needed to understand knowledge and public health gaps in this evolving landscape.

What is known about this subject in regard to women and their families?

- The climate crisis in the form of rising temperatures is a global issue impacting several facets of dermatologic health, including skin cancers.
- Rural populations have been understudied despite facing unique climate factors such as pesticides, potentially implicated in skin cancer.
- There is an even larger gap in the literature exploring dermatologic health impacts on women in agriculture despite growth in this sector.

What is new from this article as messages for women and their families?

- Women are often the family and community health advocates whose education is pivotal to societal impact.
- Climate change influences on dermatologic health should be understood through the female lens.

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