

Commentary

Racial Disparities and Climate Change in Dermatology

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Climate change is a significant public health issue that disproportionately affects underserved minorities and individuals of lower socioeconomic status [1,2]. Its effects include extreme weather events (EWE), such as wildfires and flooding, air pollution, and ozone depletion [2]. Structural racism and discriminatory practices, such as redlining, have placed marginalized populations in areas with increased heat, air pollution, and vulnerability to extreme weather events (EWE), including urban heat islands and flood zones [1,2]. Increased exposure to UV radiation, environmental pollutants, and EWE, along with unequal access to dermatologic care, may exacerbate racial and socioeconomic disparities in dermatologic diseases [1,2].

Increased exposure to UV radiation as well as carcinogenic pollutants released from wildfires contribute to an increased risk of skin cancer [1,2]. A 1% decrease in ozone layer thickness is predicted to increase the rate of melanoma by 1-2%, squamous cell carcinoma by 3 - 4.6%, and basal cell carcinoma by 1.7- 2.7% [2]. The rate of melanoma has approximately doubled from 2000 to 2019 [2]. Unfortunately, disparities in melanoma outcomes have been increasing: Hispanic patients face nearly double the risk of melanoma-specific death, while Black patients face almost quadruple the risk compared to White patients [3]. Climate-driven increases in skin cancer risk are likely to worsen these inequities.

Air pollutants, including those released from wildfires, also exacerbate atopic dermatitis (AD) and psoriasis [1]. Binding of environmental pollutants, such as PM 2.5 and O₃, to the aryl hydrocarbon receptor generates oxygen species that contribute to skin barrier disruption [1]. During the California Camp Fire, the rate of systemic medications prescribed for AD increased by 45%, and the number of clinic visits for psoriasis increased by 45% at eight weeks [4,5]. Marginalized populations are more likely to live in areas with increased pollution and decreased access to dermatologic care, resulting in heightened disease severity following wildfires [1,2].

Flooding events contribute to increased bacterial and fungal infections due to flood water contamination and infection of dermatologic injuries [1,2]. For instance, 24 cases of *Vibrio vulnificus* and *parahaemolyticus* were reported after Hurricane Katrina, resulting in six deaths [6]. Flooding and climate-driven changes in the geographic distribution of vector-borne diseases have

also led to a rise in conditions such as leishmaniasis and dengue fever [1,2]. Flooding creates areas of stagnant water, which are ideal breeding grounds for mosquitos and sandflies that can transmit vector-borne diseases [1]. For instance, Iran recorded an approximately 217% increase in leishmaniasis cases following a flood [7]. Minority patients and those of lower socioeconomic status are more vulnerable to flooding events and the associated dermatologic health consequences [1].

We aim to highlight the racial and socioeconomic disparities in dermatologic diseases that are exacerbated by the effects of climate change. To mitigate these inequities, dermatologists can advocate to increase access to sunscreen in local communities via sunscreen dispensers, develop mobile clinics in underserved areas, and expand telehealth services. By proactively addressing these challenges through policy advocacy and community engagement, dermatologists can play a critical role in addressing climate-driven disparities and improving skin health outcomes for all populations.

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