UV Exposure and Risk of Cutaneous Melanoma in Skin of Color

Findings suggest that UV exposure is unlikely associated with an increased risk of developing melanoma in individuals with skin of color.

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By Rachel Fischer, PhD, Senior Associate, Scientific Program and Grants Administration

While the chance of developing melanoma among People of Color is less than among whites, melanoma does occur across all races. The biggest risk factor for cutaneous melanoma, the most common type of melanoma, is ultraviolet (UV) light exposure from the sun. Melanin, a natural pigment that gives color to skin and hair does offer some protection against UV light. The darker the skin, the more melanin, and the more protection it offers from UV damage. This is why experts believe People of Color are less susceptible to UV damage from the sun. However, even among people with very dark skin, melanin still isn't enough protection from all of the dangerous effects of the sun.

At the same time, it is important to note, when People of Color do develop melanoma, it is far more likely to be a rare melanoma subtype not thought to be caused by the sun, such as acral, mucosal, or uveal melanoma. Moreover, People of Color are often diagnosed at later stages and have lower rates of survival. This disparity demonstrates a need for more research on melanoma prevention and early detection among People of Color. For example, experts tout UV protection – such as sunscreen – for skin cancer prevention. However, this recommendation is not based on any comprehensive study showing a clear association between UV exposure and an increased risk of developing melanoma in skin of color.

In a recent issue of the journal JAMA Dermatology, a team led by Adewole S. Adamson, MD, from The University of Texas at Austin, investigates whether there is an association, specifically in People of Color, between UV exposure and melanoma. In the article, "UV Exposure and the Risk of Cutaneous Melanoma in Skin of Color" he and his colleagues carefully reviewed all published studies on this topic and critically assessed and synthesized each into what is called a systematic review. Systematic reviews are helpful because they offer a clear and comprehensive overview of all of the available evidence on a given topic, and strive to give a definitive answer on a particular research question. Adamson's review included a total of 13 articles: 7 ecological studies, 5 retrospective cohort studies, and 1 case-control study. Six of the studies were conducted in the United States, three in Korea, one in Taiwan, one in India, one in Chile, and one was multi-national.

The data analyzed in these studies were retrieved from state, regional, and national cancer registries.

Adamson and his colleagues defined skin of color in their review as all races/ethnicities except non-Hispanic White, Fitzpatrick skin type IV-VI (light brown, brown, or dark brown/black skin), or tanning ability (rarely or never burns). This definition, and who is included in the analysis based on this definition, is important because it absolutely will impact Adamson's later findings, and makes clear his distinction between People of Color (which we tend to define by racial or ethnic categories) and people with skin of color. Often, when discussing skin color, we default to talking about race or ethnicity, yet skin color varies widely within and across racial or ethnic categories. In 1975, Thomas Fitzpatrick, MD, PhD, developed a classification system that could more closely predict risk of sun burn during phototherapy. He later called this the Fitzpatrick Scale. While still not perfect, and biased by traditional concepts of race and ethnicity – it is still used today as a more objective way to classify skin tone and can offer benefits in assessing risk for melanoma.

Eleven of the studies reviewed showed no association between UV exposure and increased risk of developing melanoma in people with skin of color. This included three large studies in the United States that used the Surveillance, Epidemiology, and End Results (SEER) cancer registry. (The SEER registry, a well-established program of the National Cancer Institute, is a geographically diverse group of registries that covers over 35% of US population). While these studies did not show an association between UV exposure and melanoma in skin of color, there have been many previous studies using SEER data that show a consistent association between UV exposure and increased risk of melanoma in white individuals. Several of the international studies also failed to show an association between UV exposure and melanoma risk in People of Color. Two of the studies reviewed found weak associations between UV exposure and melanoma in skin of color; specifically, a correlation between melanoma incidence and UV index among Black men, and an association between UV index and latitude with cutaneous melanoma in a Chilean population.

Adamson's Findings:

Based on a systematic review of the studies published to date, Adamson and his colleagues conclude that UV exposure is unlikely associated with an increased risk of developing melanoma in individuals with skin of color. They question the need for people with skin of color to practice UV protection, such as wearing sunscreen, to reduce their risk of melanoma. Based on their review, available research does not support this recommendation. However, while sun protection may not reduce risk of developing melanoma among people with skin of color, it is beneficial for other UV-associated disorders, such as photoaging, melasma, hyperpigmentation, and the prevention of non-melanoma skin cancers.

The Challenges:

While these are important findings, to be absolutely clear, this does not mean that Adamson's study answers this question once and for all. There are still too many unanswered questions, gaps in the available literature, and very real limitations to the studies that are available. Nkanyezi N. Ferguson, MD, Clinical Associate Professor of Dermatology from the University of Iowa, outlined

some of these challenges and nuances in her editorial accompanying the review. For example, at the most basic level, UV exposure is not an easy thing to measure in a large population. Measures such as altitude, UV index, season, or latitude can be used to estimate population-level sun exposure. However, to accurately determine an individual's UV exposure, additional factors must be considered like the use of sun protection, amount of time spent outdoors, and childhood sun exposure.

Things are further complicated when you consider the many ways 'skin of color' is defined in clinical research. Most of the studies reviewed used race and/or ethnicity to group participants. For this type of research, this may be too generalized to be meaningful. For instance, one of the studies found an association among multiethnic participants with a high susceptibility to sunburn, due to features such as their hair color, eye color, tanning ability, and skin's reactivity to sunlight. We also know that certain medications and skin care products can impact a person's photosensitivity – which were not included in part of this analysis.

Not All Melanomas Are Formed the Same:

Another important consideration is that most of the studies analyzed in this review did not differentiate between melanoma subtypes, such as cutaneous, acral, mucosal, or uveal melanoma. Studies have shown that the most common melanoma subtype seen in People of Color is acral lentiginous melanoma. Acral melanoma forms in places that are not typically exposed to the sun, such as the palms, soles of feet, or under finger or toenails. The risk factors for developing acral melanoma have not been well established – but researchers do not believe acral melanoma to be associated with UV exposure. Fortunately, despite the many research gaps, patients with acral melanoma often respond to treatment with checkpoint immunotherapies.

As the largest non-profit funder of melanoma research, including research into rare melanoma subtypes, MRA is leading the way to accelerate research and improve outcomes for people diagnosed with rare melanomas. This is why MRA is launching the RARE Melanoma Registry, a direct-to-patient registry for patients with acral and mucosal melanoma. The RARE Registry is a free, interactive mobile app and web-based tool for the acral & mucosal melanoma community. Patients with acral or mucosal melanoma will provide detailed information about themselves and their melanoma journey to inform critical questions about risk factors, genetics, epidemiology, diagnosis pathways, treatment effectiveness, adverse events, natural history of disease, clinical trial awareness, and quality of life for patients with acral and mucosal melanomas.

Looking Forward:

Adamson concludes that further research is needed to understand the risk factors for developing melanoma in individuals with skin of color, to improve outcomes and reduce related health disparities. And Ferguson emphasizes that delivery of best practices and preventive measures developed will be critically important as well. While people with skin of color appear to be less at risk for melanoma caused by the sun, sun-safe habits are still important. That's because, in addition to causing skin cancer, UV light also damages skin in other ways. Sunburn, premature aging, wrinkles, and hyperpigmentation are all caused by cellular damage from the sun. Using

sunscreen daily – and adopting other sun safe habits – can help fight all of these conditions. To avoid the unflattering white or purple cast some sunscreens can leave skin with, try looking for a sunscreen that describes itself as sheer, ultra-sheer, or invisible. In addition to sun protection, a regular self-exam, that includes areas like the soles of the feet, in-between toes, palms of hands, and nail beds is recommended for everyone. If you see something that concerns you, SAY SOMETHING either because it meets one of the ABCDEs of melanoma or just stands out. Talk to your doctor or see a dermatologist.

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