Skin Cancer and Sun protection in Skin of Color

Beware: skin cancer happens in all skin types and skin color
“Just because your skin is darker does not mean you are immune to skin cancer.”

For people of color, skin cancer may not be top of mind as a significant health threat. However, while rarer in skin of color, skin cancer does occur and can be quite serious when diagnosis is delayed.

Ethnicity does not confer skin type, and ethnicity does not confer immunity. For example, someone who identifies as non-Caucasian or multiracial may have very light skin. Everyone regardless of skin color or ethnicity should practice the same sun safety measures.

The lack of skin cancer recognition in patients of color poses a serious health threat if left untreated.

When detected early, skin cancer is highly curable. That’s why people of color need to be aware of their risk and be vigilant about protecting their skin from the sun as well as seeking help with skin lesions that do not heal.

Dr. Wendy Roberts
Medical Director of Desert Dermatology Skin Institute
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SKIN CANCER IN SKIN OF COLOR - THE FACTS

Raising awareness: people of color may get skin cancer

- Skin cancer does not discriminate, it occurs in all populations whatever their skin color.
- In fact, studies consistently show that when compared to Caucasians, people of non Caucasian heritage are more likely to die from this curable disease.
- A recent epidemiological review published by the AAD\(^{(1)}\) showed that the 5-year survival rates for African-Americans (78%) is significantly lower than that of Caucasians (92%).
- Studies also revealed that the incidence of melanoma is increasing in US Hispanics.
- Statistics such as this highlight the need to raise awareness about skin cancer in skin of color among doctors and patients.
- This is particularly important as the US population is rapidly changing. It is projected that by the year 2050, more than half of our country’s population will be comprised of ethnic minorities\(^{(2)}\).
- Ultraviolet radiation still remains one of the most important factors contributing to the risk of developing a skin carcinoma among all skin phenotypes.

Causes of skin cancer in skin of color

SKIN CANCER AND SKIN OF COLOR

<table>
<thead>
<tr>
<th>Type of Cancer</th>
<th>Primary Predisposing Factor</th>
<th>Most Common location</th>
</tr>
</thead>
<tbody>
<tr>
<td>Basal Cell Carcinoma</td>
<td>sunlight</td>
<td></td>
</tr>
<tr>
<td>Malignant Melanoma (African-Americans, Asians, Hawaiians, Native Americans, Darker-skinned Hispanics)</td>
<td>unknown</td>
<td></td>
</tr>
<tr>
<td>Malignant Melanoma (Lighter-skinned Hispanics)</td>
<td>unknown</td>
<td></td>
</tr>
<tr>
<td>Squamous Cell Carcinoma</td>
<td>chronic, non-healing wounds/ulcerations, scars and chronic inflammatory skin conditions (e.g. discoid lupus, lichen sclerosus, lichen planus)</td>
<td></td>
</tr>
</tbody>
</table>

There is a need to educate of people with dark skin on skin cancer risk and sunscreen use

(2) US Census Bureau.
Many patients think that non-Caucasian people are immune to skin cancer. That is one reason people of color are diagnosed at a later stage, meaning that skin cancers are often advanced and potentially fatal.

Dr. Mona Gohara
Assistant Clinical Professor, Department of Dermatology
Yale University School of Medicine, New Haven, Connecticut

Did you know that everyone, regardless of skin color can sunburn?

A survey conducted by the Centers for Disease Control and Prevention revealed the following sunburn rates in each listed ethnic group. Minimum rates listed for the respondents:

<table>
<thead>
<tr>
<th>Ethnic group</th>
<th>Male one sunburn in the preceding year</th>
<th>Female one sunburn in the preceding year</th>
<th>Respondent &gt; 4 sunburns in the preceding year</th>
</tr>
</thead>
<tbody>
<tr>
<td>American Indian/Alaskan Natives</td>
<td>30.4%</td>
<td>21.5%</td>
<td>19.6%</td>
</tr>
<tr>
<td>Asian/Pacific Islander</td>
<td>16.2%</td>
<td>16.1%</td>
<td>15.5%</td>
</tr>
<tr>
<td>Hispanics</td>
<td>12.4%</td>
<td>9.5%</td>
<td>19.1%</td>
</tr>
<tr>
<td>African-Americans</td>
<td>5.8%</td>
<td>5.8%</td>
<td>12.3%</td>
</tr>
</tbody>
</table>

“Many patients think that non-Caucasian people are immune to skin cancer. That is one reason people of color are diagnosed at a later stage, meaning that skin cancers are often advanced and potentially fatal.”

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ARE WE GETTING OUR MESSAGE ABOUT SUN SAFETY AND SKIN CANCER TO PEOPLE OF COLOR?

<table>
<thead>
<tr>
<th>Fast Facts</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>The number of surveyed skin of color respondents who felt they were not at risk for skin cancer</td>
<td>65%</td>
</tr>
<tr>
<td>The increase in incidence of melanoma amongst Hispanic females living in Florida (only a 3.0% increase in incidence among Caucasian females)</td>
<td>3.4%</td>
</tr>
<tr>
<td>The metastasis rate or Squamous Cell Carcinoma in people of color (vs 4% in Caucasians)</td>
<td>31%</td>
</tr>
<tr>
<td>The number of skin of color respondents living in Florida with regional or distant melanoma metastasis at time of diagnosis (compared to 12% in Caucasians)</td>
<td>26%</td>
</tr>
<tr>
<td>The number of surveyed African-American adults that never wore sunscreen</td>
<td>62%</td>
</tr>
<tr>
<td>The number of surveyed skin of color respondents who had performed a self skin check</td>
<td>31%</td>
</tr>
<tr>
<td>The number of surveyed skin of color respondents who had gotten a skin check by a dermatologist</td>
<td>17%</td>
</tr>
</tbody>
</table>

THE SCIENCE BEHIND SKIN CANCER AND SKIN OF COLOR

Back to basics: skin biology

People with dark skin have a higher melanin and eumelanin (brown-black pigment) content which reduces the risk of skin cancer induced by ultraviolet radiation from sun exposure. In dark skin, melanin may provide a sun protection factor (SPF) equivalent to 13.4, compared to 3.4 in light skin. This difference illustrates why skin cancer is more prevalent in light skinned people.

![Fontana-Masson staining of skin samples: light skin (A), intermediate skin (B), tan skin (C), brown skin (D) and dark skin (E)]

Diversity among skin of color

Dark skin offers some protection from solar ultraviolet. However, there is considerable skin color heterogeneity among people of color.

A recent study conducted by L’Oréal Research teams in Chicago focused on this skin color diversity. Using the Individual Typology Angle (°ITA) based on colorimetric parameters, L* (luminance) and b* (yellow/blue component), skin color types were classified objectively into 6 groups, from very light to dark skin. This study confirmed the color heterogeneity within people of color: lighter phenotypes do exist.

![US Caucasian skin (n=217), US Hispanic skin (n=105), African-American skin (n=101)]

Considering this diversity of skin color, inherent sun protection of skin of color varies as does the predisposition to the harmful effects of ultraviolet radiation in regards to skin carcinomas and other secondary effects of ultraviolet radiation.
THE SCIENCE BEHIND SKIN CANCER AND SKIN OF COLOR

Skin of color and sensitivity to UV-induced DNA damage

- DNA is a particularly important biological endpoint and helps to better understand skin cancer. Indeed, its alteration can affect many cellular functions, and can lead to mutations and genetic instability.

- It is now clear that both UVB and UVA play a role in sun-induced DNA damages: UVB impacts DNA directly whereas UVA toxicity mainly depends on indirect mechanisms in which reactive oxygen species (ROS) are generated.

All skin types are sensitive to UV light

A study was conducted in L’Oréal Research laboratories using 42 ex vivo skin samples classified by their color according to their ITA value from light to dark skin\(^\text{(9)}\). Those skin samples were exposed to increasing doses of solar-UV radiation. An immunolabeling method was used to detect the formation of well-known DNA lesions, cyclobutane pyrimidine dimers (CPD).

The results showed that all skin types are sensitive to UV-light but with an inverse relationship between constitutive pigmentation and DNA damages formation:

- From Light to Tan skin: DNA lesions observed in the epidermis and the superficial dermis

- For Brown and Dark skin: DNA lesions observed in suprabasal layers only

This study explains the lower susceptibility of skin cancer in brown and dark skin types. From light to tan skin types, there is high risk of DNA damages. This includes most Hispanics and some African Americans.

\(^{(10)}\) Del Bino S, et al. Assessment of skin color types based on the individual typology angle among different geographical areas. Poster WCD 2011 Séoul
Founded more than a century ago by the chemist Eugène Schueller, L’Oréal has consistently invested in cosmetic research, with the aim of ensuring that its products meet the highest possible standards of quality, safety and innovation.

For more than thirty years, L’Oréal has been involved in photoprotection research:

- With more than 160 scientific publications in this field, L’Oréal has contributed significantly to better understanding the molecular and biological effects of ultraviolet radiation on skin and in developing safe and efficient sun-protecting products.

- Thanks to strong support from the dermatological community, L’Oréal has pioneered and campaigned to strengthen public protection against the damaging effects of UVA rays and the need for well-balanced photoprotection. It is now acknowledged that a broad spectrum sunscreen with UVA and UVB protection is necessary to be well protected against the damaging effects of the sun.

- L’Oréal is committed to the reduction of testing on human volunteers. This has been achieved with the development of reconstructed skin models. With a 3D tissue structure, a complete skin growth and skin pigmentation, reconstructed skin models are reliable tools for basic research purposes. They are also used as a predictive method for evaluating the performance and the safety of ingredients and suncare products.