Why you should use sunscreens indoors

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IT MAY BE SURPRISING that there are dermatologic risks of UV exposure from lamps and other indoor light sources that we use daily. Is long-term daily exposure to presumably low-irradiance lights of clinical significance to photodermatoses? Recent findings suggest that skin protection must be practiced indoors to adequately protect the skin against UV rays.

Photodermatoses, such as lupus, actinic prurigo, and xeroderma pigmentosum, are only a few of the skin diseases that are triggered by UV exposure; however, chronic low-dose exposures to UV light, such as those associated with indoor lighting, may also be triggers of such conditions. Melasma, for example, can be triggered by heat or UV light. Chronic exposure to ambient light may darken the skin, necessitating daily UV protection in both indoor and outdoor settings.

Dermatologists can attest to the number of patients that confess that they only sometimes wear sunscreen "when outside." If UV exposure to inside lighting has more significant effects on the skin, however, more precautions must be taken to prevent skin cancer, melasma, and other skin damage from exposure through window glass, and from fluorescent bulbs, halogen lamps, and tablet and computer screens.

A study examining light sources in the environment of a child with xeroderma pigmentosum suggested that indoor lights emit unexpected amounts of UV light as measured by a spectral radiometer. This finding illustrated that cumulative, chronic doses of indoor lighting may be of clinical significance.

Interior lighting is also implicated in worsening of melasma and other photosensitive dermatoses. Incandescent bulbs have little to no UV irradiance. However, fluorescent lighting has been shown to increase lifetime UV exposure by 3% based on the distance the lamp is from the skin. If the lamp is close – particularly desk lamps, bed lamps, and overhead lamps – the light and heat emitted can worsen photoexacerbated dermatitidis. Avoiding close contact with the light or adding acrylic or plastic diffusers to the light can help reduce exposure.

Halogen bulbs are filled with an inert gas and a halogen, such as iodine. These bulbs are usually made of quartz because quartz is more resistant to the high heat emitted by these bulbs. But the quartz does not block UV radiation, which is why manufacturers add UV-blocking agents and heat-resistant glass to block the UV; however, the amount blocked is usually unknown. As with fluorescent bulbs, the distance from the bulb is essential to protect against both the UV and heat emitted. Light-emitting diodes (LEDs) generate a light from a semiconductor material that converts blue light into white light with the use of phosphorus; LEDs do not emit UV rays and, therefore, are a safer light source for the skin.

Lamps that are not used for lighting also must be considered. The Food and Drug Administration recently released a consumer alert regarding the use of UV-curing lamps at nail salons because of the UV radiation emitted. Since daily use of such lamps is not common, the risk of such an exposure is low; but precautions against UV exposure have, nonetheless, been recommended. UV-protectant gloves and application of a broad-spectrum sunscreen on the hands prior to use is recommended to decrease the risks of UV exposure to the hands.

In addition to the use of lamps, the light that passes through glass is easy to underestimate. Unlike UVB rays, UVA rays pass through glass and affect the skin. The percentage of UVA rays that pass through glass depends on the type of glass and the coating on the glass. There are three types of window glass: clear, reflective, and tinted. Clear glass allows 75% of UVA through, while reflective and tinted glass allow only 25%-50% of UVA rays to pass through. Low-emissivity glass (Low-E) is made to reduce heat transfer and is similar to clear glass. The most protective glass is laminated or UV-coated glass that filters out 95%-99% of all UVA rays. Unfortunately, most residential and commercial buildings do not have UVA protection. The use of blinds, shades, and tinted glass, and increasing the distance from windows and doors are the best methods of protection from chronic daily UVA exposures.

In most cars, windshield is made of laminated glass (two layers of glass with a layer of plastic in between), which blocks all UVB and approximately 50% of UVA rays. However, side and rear windows are often clear glass, which does not prevent UVA rays from penetrating through. Patients with photosensitive dermatoses and all melasma patients are encouraged to tint the side windows of their vehicles to reduce UVA exposures to 15%-30%. Tinting, however, must be in compliance with the federally mandated standard of 70% minimum visible light transmittance. In my practice, daily UV protection is recommended for all patients, even within an automobile or in an office. Daily cumulative exposure can cause chronic skin damage and early signs of photoaging.

Other sources of indoor exposures include TV monitors, computers, tablets, and UV sterilization devices in the workplace. Older cathode-ray-tube screens emit UV radiation; however, the newer liquid crystal display (LCD) or flat-panel monitors commonly found on laptops, desktops, and mobile devices do not emit UV radiation. They do emit blue light – although a small fraction, compared with that emitted by the sun. The amount of time spent in front of these screens and their proximity can pose a problem as blue light can increase reactive oxygen species, which is the most common contributor to premature aging. These devices also emit heat, which can exacerbate erythema ab igne and other heat-sensitive skin conditions.

Blue light has a very short wavelength with high energy. Studies have shown that permanent eye damage, including macular degeneration, from extended exposure to close-range blue light from computers and tablets is possible. Close-range blue light has been associated with increased skin melanogenesis. Skin hyperpigmentation, such as in lichen planus pigmentosus and melasma, also can be exacerbated by blue light; to prevent the worsening of such conditions, discretion is advised with regard to the use of these devices in close proximity to the skin.

The risks of indoor UV and blue light exposures are commonly overlooked. Skin protection with broad-spectrum sunscreen both inside and outside should be used daily for maximum protection. Care should also be taken to limit exposure times and increase distance of these objects from the skin and eyes. ■

References

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