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# Gel manicures and ultraviolet A light: A call for patient education

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## Abstract

Gel manicures have become a popular beauty trend in recent years. The specially formulated nail polish must undergo curing under light-based units. The majority of these curing lamps emit high-intensity ultraviolet A, which can cause skin damage and increase the risk for skin cancers. Incorporating relevant information in patient education endeavors can help them practice avoidance, apply broad-spectrum sunscreen prior, or use nitrile exam gloves in order to prevent photoaging and skin cancer resulting from these procedures.

*Keywords: dermatology, nails, ultraviolet light, skin aging, skin wrinkling*

## Introduction

Gel manicures are a beauty phenomenon that has recently been gaining in popularity. Since 2010, gel manicures have received immense exposure owing to large marketing campaigns with claims of increased resilience, luster, and shine compared to traditional nail polish [1]. After the specially formulated gel nail polish is painted on, it must go through a unique curing process in order to harden and bind to the nails, which involves keeping hands under a light-based unit. Whether this technology is safe for patients remains a controversial topic and one that dermatologists should be familiar with as cultural trends evolve and beauty movements develop.

The majority of manufacturers of gel manicures use curing lamps that emit high-intensity ultraviolet A (UVA). Currently, there are dozens of models that are marketed for sale on the internet to both consumers and businesses. Since there is a lack of regulations, the lamp output can significantly vary between manufacturers. Various models currently advertise different lamp strengths, which also affects the duration of curing times. Fortunately, a select few manufacturers have started to also offer LED-based units with shorter curing times and safer light emissions, even though they may still emit a small amount of ultraviolet (UV) light. However, there have yet to be significant regulations for salons or spas to advertise the type of unit they use or the associated risks.

It is widely known that UVA penetrates deeply into the dermis to cause cellular damage and photoaging. Research suggests that UVA may also be even more mutagenic than ultraviolet B, since it causes oxidative stress and free radical formation with less cell cycle arrest [2]. Given that gel manicures are a recent phenomenon, there is little data on its potential adverse effects. A case series of two patients who developed squamous cell carcinomas on their dorsal hands suggested a possible association with exposure to UVA nail lamps [3]. Another study found that after 10 minutes under a curing lamp, a person's hands receive an energy dose equivalent to what the International Commission on Non-Ionizing Radiation Protection

considers to be the day-long recommended limit for outdoor workers [4]. In contrast, other studies have suggested that the risk from UVA curing lamps is relatively low [5, 6]. The Skin Cancer Foundation currently advises that the most intense devices present a moderate UV risk and that it would be safest to avoid drying lamps altogether [7].

Physicians have an obligation to educate patients about potential health risks of products or procedures. They cannot always rely upon industry to either voluntarily make product changes or offer public warnings. In the case of gel manicures, the literature on safety is currently conflicting. However, we recommend that physicians be cautious until more evidence becomes available.

The potential for photoaging and skin damage remain largely unknown to most patients. Dermatologists who encounter women with

decorated nails might consider incorporating relevant questions into their registration questionnaires. If women insist on getting gel manicures, then a discussion on the dangers of UVA can be integrated into routine sun safety education. Furthermore, protective practices can be discussed, which include advising patients to inquire if their salon or spa uses LED-based units for gel manicures and if not, seek facilities that do. Patients can also apply broad-spectrum sunscreen 20 minutes prior to the use of curing lamps, which is a recommendation of the Skin Cancer Foundation [7]. Finally, patients can also be advised to wear nitrile exam gloves with the finger tips cut off, which has been suggested to be effective [6]. As more findings emerge, patient education on the potential increased risk of skin cancer and photoaging from these units should be updated.

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