

- Ultraviolet rays / Radiation

The UV lamps used for certain manicures could have harmful effects

The Sun (Malaysia) · 1 Feb 2023 · 20

PRIZED for their resistance and shine, gel manicures have been a staple of beauty routines around the world for several years. But a US study has now questioned their safety and, more specifically, that of the UV lamps used in the process. Over time, these could potentially damage DNA and cause mutations that could increase the risk of skin cancer.



The application of gel nail polish, or semi-permanent nail polish, requires the use of UV lamps that allow the product used to harden and dry quickly, while giving it a glossier finish than traditional nail polishes. These strengths have turned these manicure techniques into beauty must-haves. However, the UV lamps used in these services, which are similar to small tanning beds, have not yet been the subject of scientific studies establishing the safety of these techniques. Tanning booths meanwhile, which emit mainly UVA rays – like nail lamps, although with greater intensity and covering a different spectrum – have been subject to research demonstrating a proven risk of skin cancer.

After discovering cases of skin cancer on the hands of two healthy women who regularly had this type of manicure, a team of researchers from the University of California, San Diego and the University of Pittsburgh decided to look at the impact of these UV lamps on human cells at molecular and cellular levels. Published in the journal *Nature Communications*, their research suggests that frequent, long-term exposure to these lamps could damage DNA, leading to cell mutations similar to those seen in skin cancer patients.

20 to 30% of cells are destroyed in 20 minutes

To reach these conclusions, the researchers exposed human and animal cells – mouse embryonic fibroblasts, human foreskin fibroblasts, and adult human keratinocytes – to these UV lamps under various conditions. “Each primary cell line was irradiated one, two, or three times, with the duration of each exposure lasting between 0 and 20 min. Cell viability was measured 48 hours after the final irradiation, with each condition repeated at least three times,” the study authors explain.

After concluding their experiments, the scientists observed a cytotoxicity induced by the UV radiation emitted by the nail lamps. They specify that a single 20-minute irradiation caused the death of 20 to 30% of cells, while three consecutive 20-minute exposures resulted in the destruction of 65 to 70% of cells. The scientists also came to the conclusion that frequent, long-term exposure could lead to mutations similar to those observed in skin cancer patients.

These results require a more in-depth epidemiological study before sounding the alarm on these devices, which, it should be noted, are not used in the same way in every region of the world. “It is likely that such studies will take at least a decade to complete and to subsequently inform the general public,” the scientists say.

Salon exposure amounts to less than 10 minutes

While this study is by no means insignificant, it is important to note that the findings do not necessarily

reflect the actual conditions of a gel manicure, whether performed at home or in a salon. For such a service, the drying time after each layer of product – a base, two coats of varnish, a top coat – varies, on average, between 30 seconds and 120 seconds, depending on the type of lamps used, and it can even be less in some salons. This means that, at most, a customer's hands will spend eight minutes under the lamp. This is much less than the time tested by the researchers. This does not mean that the risk is not real – far from it – but that further studies are indeed needed to support this initial investigation.