

Potential for sun damage should be carefully balanced with need for vitamin D in children, say scientists

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Credit: Marina Shemesh/public domain

Scientists at King's College London are encouraging parents and carers to ensure even more rigorous protection of children against the harmful effects of the sun. The comments follow a study which has suggested that children may experience much more significant DNA damage from small amounts of sun exposure than adults.

Published in the *British Journal of Dermatology*, the new study of 32 children under the age of 10 was undertaken at a 12-day summer camp in Poland. Children's skin types ranged from pale white skin that burns easily to olive skin that burns minimally. Researchers, led by Professor Antony Young at King's College London, measured levels of vitamin D alongside a urine biomarker of DNA damage that can lead to skin cancer, known as CPD, which is produced as a result of the skin repairing this damage.

The scientists, in an EU funded collaboration with Professor Joanna Narbutt of the Medical University of Lodz, Poland and Dr Peter Philipsen of the Bispebjerg University Hospital in Copenhagen, measured exposure to UV rays via an electronic device on the wrist that absorbed the rays. Children filled in diaries with information about sunbathing, sunscreen use and sunburn.

The study, found a 25% increase in average vitamin D concentrations in blood but measured nearly thirteen times more CPD on average at the end of the 12-day beach holiday in comparison to levels at the start.

The final levels of CPD in the children were similar to those measured in Danish adults as part of a different study conducted by the same researchers which looked at [sun exposure](#) on a shorter holiday in Tenerife, despite the fact that the weather was not particularly sunny during the course of the children's summer camp.

The NIHR-supported researchers think the results may suggest that either children are more sensitive to the damaging effects of the sun than even previously thought, or that they could be better at repairing the damage.

Sun exposure is the main source of vitamin D, which is absolutely essential for healthy bone development in children. However, sunburn in

childhood is a recognised risk factor for skin cancer in older age so researchers suggest that the findings support the need for a better understanding of the impact of UV rays on children, even in less sunny conditions. This is of concern because the incidence of skin cancer is increasing in most Western countries.

'Many parents are already very careful about protecting their children from the harmful impact of the sun,' commented the study's senior author, Professor Antony Young from the St John's Institute of Dermatology at King's College London, 'but it can be a confusing message when trying to balance this with the need for children to be healthy, exercise, play outside and produce sufficient levels of vitamin D.'

'Our study suggests that only small amounts of exposure to the sun are needed to ensure vitamin D sufficiency so we should make sure that children always have ample sun protection when playing outside for long periods. This should be in the form of sunscreen, clothing and hats and the use of shade, even when you may not judge the weather to be that sunny.'

Nina Goad of the British Association of Dermatologists said: 'We would recommend that parents use a number of methods to prevent sun damage. The first line of defence for [children](#) should be protective clothing, such as hats, t-shirts, and sunglasses. In addition to this, it's important to make good use of shade between 11am and 3pm.

'You should bolster this protection with sunscreen. Look for one with a minimum SPF of 30 and good UVA protection. It should be applied 15 minutes before going outside and then again shortly after heading outdoors to cover any missed patches. Reapply it at least every two hours, and immediately after swimming, perspiring and towel drying or if it has rubbed off.

'If you are concerned about maintaining your family's vitamin D levels then the answer isn't to stop using sun protection, but consider options such as vitamin D supplements.'

Another recent study by Professor Young's team, led by Dr Damilola Fajuyigbe from King's College London, suggested that people with very fair skin should be routinely using sunscreen products with a protection factor (SPF) of around 60 or more in order to reduce [skin cancer](#) incidence to the very low levels usually seen in people with dark brown or black skin.

The scientists were examining the way in which melanin is distributed in different skin types and found that 70-80% of melanin in the skin was concentrated in the deepest layer (the basal layer that contains the crucial stem cells). For participants with black [skin](#), who have higher overall concentrations of melanin, this equated to protection from DNA damage that was the equivalent of around SPF 60.

More information: 'Children sustain high levels of skin DNA photodamage, with a modest increase of serum 25(OH)D3 after a summer holiday in Northern Europe' is published on 25 April 2018 in the *British Journal of Dermatology*.

Provided by King's College London

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