

Vitamin D deficiency linked to metabolic changes in patients with lupus

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Rheumatology Patients with lupus are more likely to have metabolic syndrome and insulin resistance—both factors linked to heart disease—if they have lower vitamin D levels, a new study reveals.

Researchers believe that boosting vitamin D levels may improve control

of these cardiovascular risk factors, as well as improving long-term outcomes for patients with [systemic lupus erythematosus](#) (SLE).

Given that photosensitivity is a key feature of SLE, the scientists say that a combination of avoiding the sun, using high-factor sunblock and living in more northerly countries may contribute to lower levels of vitamin D in lupus patients. Patients with more severe disease also had lower vitamin D levels.

An international research team, led by experts at the University of Birmingham and University of Manchester, studied vitamin D levels in 1,163 SLE patients across 33 centers in 11 countries (UK, USA, Canada, Spain, The Netherlands, Sweden, Iceland, Switzerland, Turkey, South Korea and Mexico), publishing its findings in *Rheumatology*.

Report co-author Dr. John A Reynolds, Clinical Senior Lecturer in Rheumatology at the University of Birmingham, commented: "Our results suggest that co-existing physiological abnormalities may contribute to long-term cardiovascular risk early on in SLE.

"We found a link between lower levels of vitamin D and metabolic syndrome and insulin resistance. Further studies could confirm whether restoring vitamin D levels helps to reduce these cardiovascular risk factors and improve quality of life for patients with lupus."

Lupus is an uncommon incurable immune system illness, more common in women, where the immune system is overactive, causing inflammation anywhere in the body. Untreated, the condition threatens irreversible damage to major organs including kidneys, heart, lungs and brain.

Metabolic syndrome is a combination of diabetes, [high blood pressure](#) (hypertension), abnormal cholesterol levels, and obesity. People with

metabolic syndrome are at greater risk of getting coronary [heart disease](#), stroke and other conditions affecting the blood vessels.

The researchers note that patients with SLE have an excess cardiovascular risk, up to 50 times that seen in people without the condition—this cannot be attributed to traditional cardiovascular risk factors, such as high blood pressure or smoking, alone.

The mechanisms underlying the association between high blood pressure and low vitamin D in SLE are not clear, but researchers believe they may be linked to impact of vitamin D deficiency on the renin-angiotensin hormone system, which regulates blood pressure, fluid and electrolyte balance, as well as systemic vascular resistance.

"This is the largest-ever study examining associations between [vitamin D](#) levels and [metabolic syndrome](#) in SLE; it also has the advantage of being an international cohort with diverse racial and [ethnic backgrounds](#)—generating results that will be applicable across many settings," commented Dr. Reynolds.

More information: Christine Chew et al. Lower vitamin D is associated with metabolic syndrome and insulin resistance in systemic lupus: data from an international inception cohort. *Rheumatology* 08 February 2021 doi.org/10.1093/rheumatology/keab090

Provided by University of Birmingham

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