

Study links rheumatoid arthritis to vitamin D deficiency

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Women living in the northeastern United States are more likely to develop rheumatoid arthritis (RA), suggesting a link between the autoimmune disease and vitamin D deficiency, says a new study led by a Boston University School of Public Health researcher.

In the paper, which appears online in the journal *Environmental Health Perspectives*, a spatial analysis led by Dr. Verónica Vieira, MS, DSc, associate professor of environmental health, found that women in states like Vermont, New Hampshire and southern Maine were more likely to report being diagnosed with RA.

"There's higher risk in the northern latitudes," Dr. Vieira said. "This might be related to the fact that there's less sunlight in these areas, which results in a [vitamin D deficiency](#)."

The study looked at data from the Nurses' Health Study, a long-term cohort study of U.S. female nurses. Looking at the residential addresses, health outcomes and behavioral risk factors for participants between 1988 and 2002, researchers based their findings on 461 women who had RA, compared to a large control group of 9,220.

RA is a chronic inflammatory disease that affects the lining of the joints, mostly in the hands and knees. This chronic [arthritis](#) is characterized by swelling and redness and can wear down the cartilage between bones. RA is two to three times more common in women than in men.

Although the cause of RA is unknown, the researchers wrote, earlier studies have shown that vitamin D deficiency, which can be caused by a lack of sunlight, has already been associated with a variety of other [autoimmune diseases](#).

"A geographic association with northern latitudes has also been observed for multiple sclerosis and Crohn's disease, other autoimmune diseases that

may be mediated by reduced vitamin D from decreased solar exposure and the immune effects of vitamin D deficiency," the authors wrote.

The authors said further research is needed to look into the relationship between vitamin D exposure and RA.

Dr. Vieira said she and her co-authors were somewhat surprised by the findings. A previous geographic study of RA had suggested an ecologic association with air pollution, she said.

"The results were unexpected," Dr. Vieira said. "Prior to the analysis, we were more interested in the relationship with air pollution. I hadn't given latitudes much thought."

In addition to the geographic variation, the study suggested that the timing of residency may influence RA risk. "Slightly higher odds ratios were observed for the 1988 analysis suggesting that long term exposure may be more important than recent exposure," the study said.

Dr. Vieira and other BUSPH researchers previously have used innovative spatial-temporal analyses to study the incidence of breast cancer, specifically focused on Cape Cod.

More information: Study [link](#).

Provided by Boston University Medical Center

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