

# Northerly climes linked to younger age for start of multiple sclerosis symptoms

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Demyelination by MS. The CD68 colored tissue shows several macrophages in the area of the lesion. Original scale 1:100. Credit: [CC BY-SA 3.0](https://creativecommons.org/licenses/by-sa/3.0/) Marvin 101/Wikipedia

Latitude is strongly linked to the age at which symptoms of multiple sclerosis (MS) first start, reveals a large international study, published online in the *Journal of Neurology Neurosurgery & Psychiatry*.

Each 10° increase was associated with a 10 month earlier onset of symptoms among those of European descent, the findings show.

MS is a progressive neurodegenerative autoimmune disease, and is thought to be caused by a complex interplay of genetic and environmental factors, including latitude and/or exposure to sunlight and vitamin D levels.

But it is not clear if latitude might also affect the age at which symptoms first start. In an effort to find out, the research team drew on an international database of more than 22,000 MS patients from 52 centres in 21 countries in Europe; North and South America; Asia Minor; South Asia; and Australia.

The latitude of each of the centres was divided into lower than 40 degrees, 40-50 degrees, and higher than 50 degrees, and the average amount of winter ultraviolet B (UVB) sunlight—the type involved in vitamin D manufacture in the skin—was calculated from information supplied by the Solar Radiation Database service.

Of the 26 countries, Mexico (19.4 N) enjoys an average of 14.3 watt hours/metre<sup>2</sup> of winter UVB sunlight while at the other end of the scale, Denmark (55.7 N) enjoys just 0.8 watt hours/metre<sup>2</sup>.

In common with known data on the incidence and prevalence of MS, nearly three out of four (70%+) of the participants were women, and nearly all (91.5%) had the relapsing-remitting type, which typically starts earlier than the progressive type.

A large proportion (80%+) were from the northern hemisphere, with around two thirds (67%) from Europe. Around one in six (just under 16%) were from Australia.

The average age at which symptoms first appeared was around 32. But after taking account of potentially influential factors, it emerged that each 10° increase in [latitude](#) was associated with a 10 month earlier start of symptoms, with those in the most northerly climes starting their symptoms almost 2 years earlier than those in the least northerly climes.

A similar pattern emerged for exposure to UVB, with those getting the smallest dose during the winter months nearly two years ahead of those who got the largest dose.

While sex and MS type were reflected in differences in the start of symptoms, as expected—around 9 years later for those with the progressive type—season and month of birth had little bearing on the findings, suggesting that exposure to sunlight after birth may be as important as that received while in the womb, say the researchers.

This is an observational study, so no firm conclusions can be drawn about cause and effect, added to which the researchers were unable to glean information on diet, the use of dietary supplements, and genetic factors, all of which might have influenced the findings.

Nevertheless, the researchers conclude: "These results suggest that environmental factors which act at the population level may significantly influence disease severity characteristics in genetically susceptible populations."

**More information:** Higher latitude is significantly associated with an earlier age of disease onset I multiple sclerosis, *Journal of Neurology Neurosurgery & Psychiatry*, [DOI: 10.1136/jnp-2016-314013](https://doi.org/10.1136/jnp-2016-314013)

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