

- Chronic pain

IS WEATHER AND PAIN ASSOCIATED?

Why do weather changes make pain worse?

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There are plenty of reasons to dislike chilly, wet weather, including its potential effects on our bodies. People often complain that pain from old injuries, such as broken bones or sprains, and from chronic conditions like arthritis, flares up when it's cold or raining. Hippocrates made similar grumbles some 2,500 years ago.

"It's certainly something that I have observed in my own patients," Dr Jennifer Moriatis Wolf, a professor of orthopaedic surgery and rehabilitation at the University of Chicago Medicine, said. "Patients say, 'I can tell when it's going to rain. I can tell when it's going to snow.'"

While doctors agree that such complaints are common, the reasons behind the phenomenon remain unclear. Little research has been conducted on the issue, and some of the studies that do exist have led to confusing and contradictory conclusions. Other studies, however, seem to suggest that changes in the weather can induce swelling and affect how nerves surrounding injured or inflamed tissues communicate with the brain. This brings back or amps up feelings of pain.

Is there actually a link between the weather and pain?

It depends on whom you ask. One study, published in 2016, investigated the link between the weather and pain associated with broken bones. Researchers examined data from 2,369 doctor visits after patients suffered bone fractures. At follow-up appointments, the researchers asked patients how much pain they were experiencing and recorded local weather data for that day, including temperature, atmospheric pressure and humidity. Patients reported more pain at their one-year follow-ups if the atmospheric pressure — which often drops right before storms and cold fronts — was low and if the relative humidity was above 70% on their appointment days. But the study did not find that low temperature worsened pain — instead, surprisingly, patients reported more pain when the temperature outside was above 1.5°C.

Studies investigating the link between the weather and pain associated with chronic conditions are also somewhat baffling. In a 2019 study aptly titled *Cloudy With A Chance Of Pain*, researchers analysed self-reported pain levels collected daily via smartphones, over the course of 15 months from 2,658 people living with chronic pain conditions. The researchers examined patients' pain ratings, recorded under various local weather conditions, and found that their pain worsened with increasing humidity and decreasing atmospheric pressure. The study did not, however, find a connection between pain and outdoor temperature.

A 2007 study found pretty much the opposite: pain associated with knee arthritis increased with every 12°C drop in temperature, but pain eased when atmospheric pressure dropped. Another study found no link between temperature changes and pain from hip arthritis.

The results are inconsistent most likely because the studies have typically been small and "they're all done in different ways", said Dr William G. Dixon, a rheumatologist and public health researcher at the University of Manchester in England and a co-author of the smartphone study. That is, they involve people with various conditions, assess pain in different ways and evaluate different weather-related variables, so it's not terribly surprising that they report different outcomes, he said.

ALTHOUGH MANY UNANSWERED QUESTIONS REMAIN, EXPERTS SAY THEY DO NOT DOUBT THERE IS AN ASSOCIATION BETWEEN WEATHER AND PAIN