

How the weather affects OA knee pain

By Isabel Calabria from [OA Knee Pain](#)

There are many factors that can cause pain and stiffness when it comes to suffering from osteoarthritis of the knee, from your diet to how much you exercise, but the weather can also have an adverse effect. It may remind you of a funny story you heard when you were younger about people with joint conditions claiming to be able to predict the weather, but there is evidence that there may be a genuine link between weather conditions and levels of pain.

Here we explore the various studies carried out that consider the effect of weather on OA knee pain. While evidence is slowly mounting to support the link between weather conditions and levels of discomfort, the results are not yet conclusive.

Comparing weather sensitivity in four cities

Robert Newlin Jamieson, chief psychologist at the Pain Management Center at Brigham and Women's Hospital in Boston, carried out research looking for links between chronic pain and weather in four US cities: San Diego, Nashville, Boston and Worcester.

The study, which was published in the journal 'Pain', found that two-thirds of interviewed patients claimed that their levels of pain were influenced by weather conditions. In the majority of cases, patients claimed that they could feel changes in their joints before there were any changes in the weather. When the findings were compared across the different cities, participants from San Diego were found to be the most sensitive to weather changes, with patients having some sensitivity to even the smallest of weather changes.

This evidence is far from conclusive and Jamieson acknowledges that the research has mixed conclusions as there were a significant number of patients who reported that the weather had no impact on their joint discomfort.

A comparison across countries

A Dutch study that surveyed 712 participants from countries with very different climates, including Germany, Italy, the UK, the Netherlands, Spain, and Sweden, found that 67% reported that their levels of pain were sensitive to the weather. Of the individuals who said they were weather sensitive, around 40% of them reported that their symptoms became worse in damp and rainy conditions, while 30% claimed only the cold caused them problems.

The study also found that patients living in warm, dry climates, such as Spain and Italy, reported higher levels of joint pain than those in cold, wet climates, such as Sweden. Erik Timmermans who led the study suggested that changes in joint discomfort were due to fluctuations in humidity and temperature, which affected the contraction and expansion of tissues within joints. He also hypothesised that low temperatures could make the synovial

fluid more viscous, which would cause the joint to stiffen, making it more sensitive to pain caused by movement.

So can bad weather impact pain levels?

David Borenstein, a rheumatologist and clinical professor of medicine at George Washington University Medical Centre, has found that it is not unusual for joint pain to start ahead of a storm before a single raindrop has fallen.

Many people report that cold or damp weather causes their joint pain to worsen, with further evidence suggesting that joint pain is connected to barometric pressure. Barometric pressure effectively refers to the weight of the atmosphere around us, so when bad weather approaches, the pressure often reduces, meaning the force pushing against the body is less.

For most people, the effect of changes in barometric pressure will go unnoticed, but for those with joint conditions, such as osteoarthritis, tissues in the body are able to expand, resulting in added pressure on joints, which causes pain and stiffness.

This hypothesis can be backed up by a study carried out by Tufts University in 2007 that found that a temperature drop of 10 degrees was responsible for an increase in arthritic pain. The study also found that reductions in barometric pressure, low temperatures and precipitation increased pain due to conditions in the atmosphere causing swelling in the joint.

An alternative theory

An alternative explanation is that the link is psychological rather than physical. A study into the comparison of patients who claimed their pain was weather sensitive with those who claimed it wasn't found that women, participants with a low level of education and patients who identified as anxious or depressed were more likely to be weather sensitive.

Researchers in the study led by Timmermans also pointed out that OA patients are likely to experience various levels of pain at any given time, suggesting that the uncertainty related to their pain returning causing them to become anxious. Therefore, it would seem natural that an explanation - like the weather affecting pain levels - would be sought out.

While it is not conclusive that weather directly affects OA knee pain, using this knowledge to manage joint pain could prove useful. For instance, keeping track of the weather forecast can inform patients when pain levels may increase due to bad weather, meaning they can take the relevant steps to reduce the amount of discomfort.