

Weather Conditions and Spinal Patients

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FROM ABSTRACT

Study Design: A retrospective study.

Objectives.

To evaluate the effects of various weather conditions on reported health status.

Methods. Initial visit data from 23 American centers participating in the National Spine Network included demographic information and SF-36-based health status.

Weather conditions when and where patients were seen were obtained from the National Climatic Data Center and U.S. Naval Observatory.

SF-36 outcomes were predicted using multiple regression techniques from weather parameters, which included high and low temperature, average dew point, wet bulb, barometric pressure, total precipitation, phase of the moon, and length of sunlight.

Results. A total of 26,862 patients were evaluated.

Barometric pressure was the only weather predictor that was consistently significant.

Increased pressure was associated with worse outcomes.

Although age and gender were significant additions to the prediction equation, overall, the practical contribution was minimal.

Conclusion.

A statistically significant relationship between weather factors and SF-36-based health status exists.

THESE AUTHORS ALSO NOTE:

"Musculoskeletal pain is frequently mentioned as being sensitive to variations in climate."

"The most commonly implicated climatic variables are high humidity, cold temperature, and low barometric pressure, interestingly all indicative of impending storms."

"Several studies have been published on generalized pain, joint pain, and activity level in response to weather."

This is an observational study of 26,862 patients seen by members of the National Spine Network (NSN). The NSN is a group of spine centers throughout the United States.

In this study, we used the results of the Short Form 36 (SF-36) in our analysis. The SF-36 measures functional status in 8 categories which include: General Health, Physical Function, Role-Physical, Bodily Pain, Mental Health, Social Function, Fatigue-Vitality, and Role-Emotional.

"Barometric pressure consistently shows a strong negative relationship to all SF-36 subscales. Increased pressure was associated with worse outcomes."

DISCUSSION

Research findings "suggest that abnormal impulses generated at injured areas could contribute to increased pain and paresthesias and that these impulses are sensitive to and aggravated by cold temperature."

Research has shown that "pain behavior is related to decreasing of both temperature and barometric pressure."

Studies by Hollander provided evidence that weather does influence arthritic symptoms. Falling barometric pressure significantly affected symptoms. "These findings support common folklore."

[Hollander JL. Whether weather affects arthritis. *J Rheumatol* 1985;12:655-6].

One study noted that 76% to 83% of patients were able to predict rain by their rheumatoid symptoms. The study also showed positive pain correlations with barometric pressure in rheumatoid arthritis patients, osteoarthritic patients, and fibromyalgia patients.

[Guedj D, Weinberger A. Effect of weather conditions on rheumatic patients. *Ann Rheum Dis* 1990;49:158-9].

One study noted that those patients with a higher level of self reported pain were more weather sensitive.

[Gorin AA, Smyth JM, Weisberg JN, et al. Rheumatoid arthritis patients show weather sensitivity in daily life. *Pain* 1999;81:173-7].

One study showed that chronic low back pain was influenced by the weather.

[Jamison RN, Anderson KO, Slater MA. Weather changes and pain: perceived influence of local climate on pain complaint in chronic pain patients. *Pain* 1995;61:309-15].

In one study, 76% of patients reported that sudden weather changes influenced their chronic pain.

[Shutty MS Jr, Cundiff G, DeGood DE. Pain complaint and the weather: weather sensitivity and symptom complaints in chronic pain patients. *Pain* 1992;49:199-204].

This current study, like some of the other studies, found a "statistically significant correlation between barometric pressure and symptoms."

"The two climate-related categories that showed no statistically significant correlations with any of the SF-36 variables were rainfall and phase of the moon."

CONCLUSIONS

"A clear relationship between weather variables, especially barometric pressure, and SF-36 outcome measures was seen if considered from a purely statistical outlook..."

KEY POINT FROM AUTHORS:

Barometric pressure has a statistically significant effect on self-reported health status and pain.

KEY POINTS FROM DAN MURPHY

- 1) Musculoskeletal pain is frequently sensitive to variations in climate.
- 2) Barometric pressure changes (indicative of impending storms), consistently shows a strong relationship to musculoskeletal pain syndromes, including chronic low back pain, osteoarthritis, rheumatoid arthritis, and fibromyalgia.
- 3) The percentage of those that can predict weather changes by their symptoms is as high as 83%.
- 4) Patients with a higher level of self-reported pain are more weather sensitive.
- 5) These findings support common folklore.

COMMENT:

We have all seen these patients. I have used this concept well in testifying in some court cases because it is the truth, and some of the jurors may have experienced this, or someone they know may have told them that they are afflicted with the ability to predict the weather by increases in their musculoskeletal pains.