

Chronic pain may dramatically raise your blood pressure

Widespread chronic pain may stealthily drive up blood pressure, partly through its ties to depression and inflammation.

Date: November 17, 2025

Source: American Heart Association

Summary: Chronic pain might quietly push people toward developing high blood pressure—and the more widespread the pain, the greater the danger. A massive analysis of over 200,000 adults uncovered strong links between long-lasting pain, depression, inflammation, and rising hypertension risk.

FULL STORY



Chronic pain, especially when widespread, significantly increases the risk of developing high blood pressure. Credit: Shutterstock

Research Highlights

- Chronic pain appears to play a meaningful role in raising the risk of developing high blood pressure.
 - How long the pain lasts and where it occurs both influence that risk, and part of the connection is explained by depression and inflammation.
 - Researchers say the results underscore how important effective pain management can be for preventing and controlling high blood pressure, a major driver of cardiovascular disease and death.
-

Chronic Pain Linked to Rising Blood Pressure Risk

Chronic pain in adults may raise the likelihood of developing high blood pressure, and factors such as where the pain is located, how widespread it is, and whether a person also has depression appear to play important roles. These findings come from new research published today (November 17) in *Hypertension*, an American Heart Association journal.

An evaluation of health information from more than 200,000 adults in the U.S. showed that individuals who experienced chronic pain throughout their bodies had a higher chance of developing high blood pressure compared to those reporting no pain, short-term discomfort, or pain limited to one region.

"The more widespread their pain, the higher their risk of developing high blood pressure," said lead study author Jill Pell, M.D., C.B.E., the Henry Mechan Professor of Public Health at the University of Glasgow in the United Kingdom. "Part of the explanation for this finding was that having chronic pain made people more likely to have depression, and then having depression made people more likely to develop high blood pressure. This suggests that early detection and treatment of depression, among people with pain, may help to reduce their risk of developing high blood pressure."

Understanding High Blood Pressure and Its Dangers

High blood pressure and hypertension occur when blood presses too strongly against vessel walls, increasing the chance of heart attack or stroke. High blood pressure, including stage one or stage two hypertension (blood pressure readings from 130/80 mm Hg to 140/90 mm Hg or higher), affects nearly half of adults in the U.S. It is also the leading cause of death nationally and worldwide, according to the 2025 joint American Heart Association/American College of Cardiology guideline endorsed by 11 other organizations.

Earlier studies show that chronic musculoskeletal pain -- pain in the hip, knee, back or neck/shoulder that lasts for at least three months -- is the most common form of long-term pain in the general population. The new study examined how the presence, type, and distribution of pain across the body relate to later high blood pressure.

Inflammation and depression are already recognized as contributing factors for high blood pressure; however, Pell noted that no previous research had evaluated how much these elements might explain the connection between long-lasting pain and future hypertension.

How Researchers Collected and Measured Pain Data

Participants completed a baseline questionnaire describing whether they had experienced pain in the previous month that interfered with daily activities. They identified whether the pain occurred in the head, face, neck/shoulder, back, stomach/abdomen, hip, knee or across the entire body. Those reporting pain also indicated whether symptoms had persisted for more than three months.

Depression was assessed through a questionnaire asking about depressed mood, disinterest, restlessness or lethargy during the previous two weeks. Inflammation was measured using blood tests for C-reactive protein (CRP).

Key Findings After Long-Term Follow-Up

After an average follow-up period of 13.5 years, the results showed:

- Nearly 10% of all participants developed high blood pressure.
- Compared to people without pain, those with chronic widespread pain faced the greatest increase in risk (75% higher), while short-term pain was associated with a 10% higher risk and chronic pain in a single location was tied to a 20% higher risk.
- When looking at pain locations, chronic widespread pain was linked to a 74% higher risk of high blood pressure; chronic abdominal pain to a 43% higher risk; chronic headaches to a 22% higher risk; chronic neck/shoulder pain to a 19% higher risk; chronic hip pain to a 17% higher risk; and chronic back pain to a 16% higher risk.
- Depression (11.3% of participants) and inflammation (0.4% of participants) explained 11.7% of the connection between chronic pain and high blood pressure.

"When providing care for people with pain, health care workers need to be aware that they are at higher risk of developing high blood pressure, either directly or via depression. Recognizing pain could help detect and treat these additional conditions early," Pell said.

Expert Perspective on Pain, Inflammation and Hypertension

Daniel W. Jones, M.D., FAHA, chair of the 2025 American Heart Association/American College of Cardiology High Blood Pressure Guideline and dean and professor emeritus of the University of Mississippi School of Medicine in Jackson, Mississippi, said, "It is well known that experiencing pain can raise blood pressure in the short term, however, we have known less about how chronic pain affects blood pressure. This study adds to that understanding, finding a correlation between the number of chronic pain sites and that the association may be mediated by inflammation and depression."

Jones, who was not involved in the study, recommended further research using randomized controlled trials to explore how different pain management strategies influence blood pressure. He highlighted the importance of understanding how Nonsteroidal Anti-Inflammatory Drugs (NSAIDs) such as ibuprofen may raise blood pressure.

"Chronic pain needs to be managed within the context of the patients' blood pressure, especially in consideration of the use of pain medication that may adversely affect blood pressure," said Jones.

Study Limitations and Participant Characteristics

The researchers noted that the study population mainly consisted of middle-aged or older white adults of British origin, which means the findings may not apply to people of other racial or ethnic backgrounds or younger age groups. Pain levels were self-reported, and the study relied on clinical diagnostic coding, a single pain assessment, and two blood pressure measurements.

How the Study Was Designed

Study details, background and design:

- The analysis used data from the UK Biobank, a large population-based project that recruited more than 500,000 adults ages 40-69 between 2006 and 2010. Participants lived in England, Scotland and Wales.
- This study focused on 206,963 adults. The average age was 54 years; 61.7% were women, and 96.7% were white adults.
- Overall, 35.2% of participants reported chronic musculoskeletal pain; 62.2% reported chronic pain at one body site; 34.9% had chronic pain at two to three musculoskeletal sites; and 3.2% reported pain at four sites.
- Compared with participants without pain, those reporting pain were more often women, had less healthy lifestyle patterns, larger waist circumference, higher body mass index (BMI), more long-term health issues, and were more likely to live in areas with higher unemployment, lower home and car ownership, and more overcrowding.
- Researchers adjusted for factors associated with both pain and high blood pressure, including self-reported smoking status, alcohol intake, physical activity, sedentary time, sleep duration, and fruit and vegetable consumption.
- Data from the UK Biobank was gathered through a touch-screen questionnaire, interview, physical measurements (height, weight, BMI, waist circumference, blood pressure), and blood samples for cholesterol and blood sugar (hemoglobin A1c).
- Hospital records were used to identify high blood pressure using standard International Statistical Classification of Diseases and Related Problems and diagnostic codes (ICD-10 codes).
- The follow-up period was measured from baseline until one of these events occurred: a diagnosis of high blood pressure, the participant's death, or the end of available follow-up records. The first of these events marked the end of follow-up for each participant.

Story Source:

Materials provided by **American Heart Association**. *Note: Content may be edited for style and length.*

Journal Reference:

1. Pei Qin, Frederick K. Ho, Carlos A. Celis-Morales, Jill P. Pell. **Chronic Pain and Hypertension and Mediation Role of Inflammation and Depression**. *Hypertension*, 2025; DOI: [10.1161/HYPERTENSIONAHA.125.25544](https://doi.org/10.1161/HYPERTENSIONAHA.125.25544)
-

Cite This Page:

MLA

APA

Chicago

American Heart Association. "Chronic pain may dramatically raise your blood pressure." ScienceDaily. ScienceDaily, 17 November 2025. <www.sciencedaily.com/releases/2025/11/251117095639.htm>.

Explore More*from ScienceDaily*

RELATED STORIES

High Blood Pressure During Pregnancy Linked to Thinking Problems Later

Mar. 1, 2023 □ High blood pressure disorders during pregnancy are associated with an increased risk of thinking problems later in life, according to a study. Researchers found that those with these disorders had a ...

Limited Postpartum Follow-Up May Miss High Blood Pressure in 1 in 10 New Moms

Nov. 15, 2022 □ An analysis of more than 2,400 women who did not have high blood pressure while pregnant found that about 1 in 10 were diagnosed with high blood pressure in the year after childbirth. Almost a ...

Diet Change May Make Biggest Impact on Reducing Heart Risk in People With Hypertension

Sep. 7, 2022 □ In a simulation study using the latest U.S. statistics for stage 1 hypertension, researchers found that lifestyle changes to reduce systolic blood pressure to below 130 mm Hg may prevent 26,000 heart ...

Gut Bacteria Can Make Blood Pressure Medication Less Effective

May 26, 2022 □ Hypertension, or high blood pressure, is a major risk factor for heart disease and stroke, two of the leading causes of death in America. It's also one of the most common chronic conditions in ...

If Blood Pressure Rises Upon Standing, So May Risk for Heart Attack

Mar. 17, 2022 □ Young and middle-aged adults with high blood pressure whose systolic blood pressure (top-number) rose more than 6.5 mm Hg upon standing were more likely to later have a heart attack, stroke, ...

There's No Place Like Home...to Track Blood Pressure

Sep. 28, 2021 □ Adults with elevated blood pressure who had not been diagnosed with high blood pressure found that monitoring their blood pressure at home was more acceptable than going to a kiosk, clinic or using a ...

TRENDING AT SCITECHDAILY.com

Scientists Think the Real Fountain of Youth May Be Hiding in Your Gut

This Common Knee Surgery May Be Doing More Harm Than Good

New Pill Lowers Stubborn Blood Pressure and Protects the Kidneys

Humans May Have Hidden Regenerative Powers, New Study Suggests