

# Despite their prevalence, arthritis, neck and back pain receive few research dollars, analysis finds

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Musculoskeletal diseases—a diverse category of conditions affecting bones, joints, muscles, and connective tissues—affect more than 1 in 3

people in the United States and are a leading driver of health care spending with an estimated cost of more than \$380 billion in 2016, putting them ahead of diabetes, cardiovascular disease, and cancer. Conditions that impact many people, incur high financial costs to individuals and society and negatively impact quality of life for individuals and their loved ones are said to carry a high disease burden.

Investigators led by Ara Nazarian, Ph.D., at the Musculoskeletal Translational Innovation Initiative in the Carl J. Shapiro Department of Orthopedic Studies at Beth Israel Deaconess Medical Center (BIDMC), evaluated the relationship between the disease burden for 60 conditions and the [federal funding](#) assigned to research dedicated to them.

The team's results, [published](#) in *The Lancet Regional Health—Americas*, revealed that federal funding for musculoskeletal diseases is disproportionately low despite their significant and growing impact.

"There's a huge mismatch; if you stand up in front of any audience and ask how many people have or know someone who suffers from arthritis or back pain, every hand is going to go in the air, yet musculoskeletal diseases garner less than 2% of federal research dollars," said Nazarian, who is also an associate professor of orthopedic surgery at Harvard Medical School. "To bring funding into alignment with the level of disease burden would require an approximately ten-fold increase to start with."

Nazarian and colleagues looked at National Institutes of Health (NIH) funding in 2019 and 2021 for 60 illnesses, including various cancers, cardiovascular diseases, [substance use disorders](#), Alzheimer's disease and dementias, and musculoskeletal diseases. Next, using data from the 2019 Global Burden of Disease Study, the team quantified the cumulative costs of each condition as measured in disability-adjusted life-years (DALY), a measurement of the economic and social impact of disability

on quality of life.

DALY calculations allow investigators to compare low-grade [chronic conditions](#) such as low back pain to acute causes of injury and death. (For example, the World Health Organization has reported that depression is responsible for more years lost to disability than diabetes in the U.S.)

While analysis revealed an overall positive association between disease burden and federal funding levels, musculoskeletal diseases were clearly underfunded relative to their cumulative personal and social impacts.

Rheumatoid arthritis, a progressive, debilitating autoimmune disease in which the body attacks the joints, received 67% of the funding predicted based on its impact; [low back pain](#), which costs the U.S. health care system an estimated \$100 billion a year, received just 14% of the predicted research dollars. Neck pain, affecting up to half of all people nationally and globally each year, received less than 1%—just 0.83%—of the predicted funding.

"With modern medicine, people are living longer, but they are also spending more of those years living with chronic disabling diseases," Nazarian said. "The lack of effective therapies limits our ability to manage these conditions. There is a great need for special attention to the intensifying burden of musculoskeletal issues that cause pain, impair mobility, and prevent individuals from living full and healthy lives."

The research found that without federal funding through NIH's National Institute of Arthritis and Musculoskeletal and Skin Diseases (NIAMS), innovation in musculoskeletal research is stalling. Federal dollars are needed to train the next generation of scientists and fuel the basic science that will shed new light on these complex diseases.

"Robust basic and translational research work lays important groundwork for breakthroughs in the field, which industry can then take the next steps to translate them into therapeutic solutions for the population," Nazarian said. "However, without proper public investment in the early stages of research, many good ideas and solutions that can fundamentally change people's lives will never see the light of the day."

**More information:** Andrew T. Nguyen et al, Musculoskeletal health: an ecological study assessing disease burden and research funding, *The Lancet Regional Health - Americas* (2024). [DOI: 10.1016/j.lana.2023.100661](https://doi.org/10.1016/j.lana.2023.100661)

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